ANNA UNIVERSITY OF TECHNOLOGY
COIMBATORE

DIRECTORATE OF ONLINE AND DISTANCE EDUCATION

MCA
(Academic Year: 2010-2011)

SYLLABUS
WITH CURRICULAM & REGULATIONS
(SEMESTER - I to VI)
This regulation is applicable to all candidates admitted into MCA 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 MCA programme.

ii) “Branch” means specialization or discipline of MCA 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 Application

3. ADMISSION

1. Candidates seeking admission to the first semester of the six semesters MCA Degree Programme:

   • Should possess the degree from a recognized University with Mathematics / Statistics / Computer Oriented Subjects in Degree level or Any Degree with Mathematics at H.Sc. level or Equivalent.

   • 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 MCA Programme in 6 semesters (three academic years) but in any case not more than 10 semesters (five 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:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Mode of Examination</th>
<th>Percentage of Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Terminal Examination</td>
<td>80%</td>
</tr>
<tr>
<td>2</td>
<td>Continuous Assessment</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>(Assignments)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

   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 MCA Degree provided the student has

- Successfully completed the course requirements and passed all the prescribed examinations in all the 6 semesters within a maximum period 5 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 six semesters in his/her first appearance within four six 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 six semesters within a maximum period of six 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 six semesters not within a maximum period of six 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>
</tr>
</thead>
<tbody>
<tr>
<td>95% - 100%</td>
<td>O</td>
<td>Outstanding</td>
<td>10.0</td>
</tr>
<tr>
<td>90% - 94%</td>
<td>E</td>
<td>Excellent</td>
<td>9.5</td>
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<tr>
<td>86% - 89%</td>
<td>A</td>
<td>Very Good</td>
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<tr>
<td>76% - 85%</td>
<td>B</td>
<td>Good</td>
<td>8.0</td>
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<tr>
<td>66% - 75%</td>
<td>C</td>
<td>Above Average</td>
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<tr>
<td>56% - 65%</td>
<td>D</td>
<td>Average</td>
<td>6.0</td>
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<tr>
<td>50% - 55%</td>
<td>S</td>
<td>Satisfactory</td>
<td>5.0</td>
</tr>
<tr>
<td>Below 50%</td>
<td>RA</td>
<td>Reappearance</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>RAI</td>
<td>Reappearance in Internal</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>RAX</td>
<td>Reappearance in External</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>RAB</td>
<td>Reappearance Both</td>
<td>-</td>
</tr>
<tr>
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<td>W</td>
<td>Withheld</td>
<td>-</td>
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<tr>
<td></td>
<td>AB</td>
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*****
## MCA - CURRICULUM

**Branch Code - 254**

### Semester I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Marks</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>111001</td>
<td>PROGRAMMING LANGUAGES</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>111002</td>
<td>MANAGEMENT ACCOUNTING</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>111003</td>
<td>DATA STRUCTURES AND C</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>111004</td>
<td>COMPUTER ARCHITECTURE AND ORGANIZATION</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>111005</td>
<td>OPERATING SYSTEMS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>111008</td>
<td>PROGRAMMING LAB</td>
<td>100</td>
<td>2</td>
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<tr>
<td>111009</td>
<td>DATA STRUCTURES LAB</td>
<td>100</td>
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**Total Cumulative Credits** 21

### Semester II

<table>
<thead>
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<th>Course</th>
<th>Marks</th>
<th>Credits</th>
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<tbody>
<tr>
<td>112003</td>
<td>OBJECT ORIENTED PROGRAMMING WITH C++</td>
<td>100</td>
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<tr>
<td>112005</td>
<td>DATA BASE MANAGEMENT SYSTEMS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>112006</td>
<td>SYSTEM SOFTWARE</td>
<td>100</td>
<td>3</td>
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<tr>
<td>112010</td>
<td>MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE</td>
<td>100</td>
<td>4</td>
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<tr>
<td>112011</td>
<td>MICROPROCESSOR AND ITS APPLICATIONS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>112012</td>
<td>COMPUTER GRAPHICS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>112008</td>
<td>OOPS LAB</td>
<td>100</td>
<td>2</td>
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<tr>
<td>112009</td>
<td>DBMS LAB</td>
<td>100</td>
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**Total Cumulative Credits** 45

### Semester III

<table>
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<th>Course Code</th>
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<th>Marks</th>
<th>Credits</th>
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<tbody>
<tr>
<td>113001</td>
<td>DATA COMMUNICATION AND NETWORKS</td>
<td>100</td>
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<tr>
<td>113002</td>
<td>E-COMMERCE</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>113003</td>
<td>SOFTWARE ENGINEERING</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>113004</td>
<td>DESIGN AND ANALYSIS OF ALGORITHMS</td>
<td>100</td>
<td>4</td>
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<tr>
<td>113009</td>
<td>JAVA PROGRAMMING</td>
<td>100</td>
<td>4</td>
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<tr>
<td>113010</td>
<td>GRAPHICS AND ALGORITHMS LAB</td>
<td>100</td>
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</tr>
<tr>
<td>113011</td>
<td>JAVA PROGRAMMING LAB</td>
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**Total Cumulative Credits** 66
### Semester IV

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Marks</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>114001</td>
<td>CRYPTOGRAPHY AND NETWORK SECURITY</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>114007</td>
<td>RESOURCE MANAGEMENT TECHNIQUES</td>
<td>100</td>
<td>4</td>
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<tr>
<td>114009</td>
<td>SOFTWARE PROJECT MANAGEMENT</td>
<td>100</td>
<td>3</td>
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<tr>
<td>114015</td>
<td>VISUAL PROGRAMMING</td>
<td>100</td>
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<tr>
<td>114016</td>
<td>UNIX INTERNALS</td>
<td>100</td>
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<tr>
<td>114017</td>
<td>MULTIMEDIA SYSTEMS</td>
<td>100</td>
<td>3</td>
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<tr>
<td>114018</td>
<td>UNIX AND NETWORK PROGRAMMING LAB</td>
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</tr>
<tr>
<td>114019</td>
<td>VISUAL PROGRAMMING LAB</td>
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Total Cumulative Credits: 90

### Semester V

<table>
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<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>115002</td>
<td>DATA WAREHOUSING AND DATA MINING</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>115003</td>
<td>MOBILE COMPUTING</td>
<td>100</td>
<td>4</td>
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<tr>
<td>115004</td>
<td>COMPONENT BASED TECHNOLOGY</td>
<td>100</td>
<td>3</td>
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<tr>
<td>115005</td>
<td>INTERNET PROGRAMMING</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>115013</td>
<td>OBJECT ORIENTED ANALYSIS AND DESIGN</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>115011</td>
<td>INTERNET PROGRAMMING LAB</td>
<td>100</td>
<td>2</td>
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<tr>
<td>115014</td>
<td>CASE TOOLS AND SOFTWARE DEVELOPMENT LAB</td>
<td>100</td>
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</table>

Total Cumulative Credits: 111

### Semester VI

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Marks</th>
<th>Credits</th>
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<tbody>
<tr>
<td>116001</td>
<td>SOFT COMPUTING</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>116002</td>
<td>DISTRIBUTED COMPUTING</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>116003</td>
<td>SOFTWARE QUALITY MANAGEMENT</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>116004</td>
<td>PROJECT WORK AND VIVA-VOCE</td>
<td>300</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Cumulative Credits: 129
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 make the students expose to the various accounting systems, accounting control and linking the accounting system to the Management Decision Making

MODULE 1:

MODULE 2:

MODULE 3:
Capital budgeting decisions Standards and variable costing – Production cost variance analysis – Management control environment, responsibility control and responsibility accounting information used in management control.

MODULE 4:
Budgeting – Operating budget, budget preparation, cash budget, capital expenditure budget – Control reports – Use of control reports, Designing management accounting system

MODULE 5:

MODULE 6:
Introduction to Computerized Accounting System master files, transaction files, introduction to documents used for data collection. Processing of different files and outputs obtained.

Text Books:

References:
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
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.
11. Implementation of Searching Techniques
12. Implementation of Sorting Techniques
13. Implementation of String matching algorithm
1112003 - OBJECT ORIENTED PROGRAMMING WITH C++

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:


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 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:
**OBJECTIVE:** To have an understanding of foundations of design of assemblers, loaders, linkers, and macro processors.

**MODULE 1:**

**MODULE 2:**

**MODULE 3:**

**MODULE 4:**

**MODULE 5:**

**MODULE 6:**


**References:**
OBJECTIVE: To extend student’s mathematical ability and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:
Relations – Binary relations - Partial orderings - Equivalence relations - Functions:- Properties of functions - Composition of functions – Inverse functions - Permutation functions - Permutations and Combinations - Generating functions.

MODULE 5:

MODULE 6:

Text Books:

References:
OBJECTIVE: To provide an in depth knowledge of the architecture and programming Microprocessors and to study how to interface various peripheral devices with them.

MODULE 1:

MODULE 2:

MODULE 3:
Peripheral Interfacing: Serial I/O (8251) - Parallel I/O (8255 / 8155) – Keyboard and Display Controller (8279) – CRT Controller (8275) – Printer Interface (8295) - DMA Controller (8257) – Floppy Disk Controller (8271) – Interface Standards: IEEE 488 – S 100 – RS232C.

MODULE 4:

MODULE 5:

MODULE 6:

Text Book:

References:
OBJECTIVE: To enable the students to learn the fundamental concepts of Computer Graphics and the graphics techniques and algorithms.


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

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

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:  
OBJECTIVE: To enable the students to design and develop enterprise strength distributed and multi-tier applications using Java Technology.


MODULE 4: Managing I/O Files: Concept of I/O Streams, Stream Classes, Character Streams, Byte Streams, File Streams, Random Access Files, Serialization – String Handling: String Basics, String Operations, Character Extraction, String Buffer - Java Collections: Collections Framework, String Tokenizer, BitSet, Date, Calendar, Gregorian Calendar, Time Zone, Currency.


Text Books:

References:
PART I – Graphics

Write a program using C/C++/Java language,

1. To draw various geometric objects using fundamental graphics functions.
3. To draw Circle using Bresenham Circle Drawing Algorithms.
4. To implement Clipping algorithms.
5. To perform 2D Transformations such as Translation, Rotation, Scaling, Reflection and shearing.
6. To perform 3D Transformations such as Translation, Rotation and Scaling.
7. To implement geometric projections.
8. To convert between color models.

PART II – Algorithms

Write a program using C/C++/Java language,

1. Apply the Brute Force Technique to
   a. Sort a set of numbers using Selection Sort method.
   b. Search an element using Sequential search method.
2. Apply Divide and Conquer Technique to
   a. Sort a set of numbers using Merge Sort method.
   b. Sort a set of numbers using Quick Sort method.
   c. Search an element using Binary search method.
   d. Perform Binary Tree Traversals
3. Apply Decrease and Conquer Technique to
   a. Sort a set of numbers using Insertion Sort method.
   b. Perform Graph Traversals
4. Apply Transform and Conquer Technique to sort a set of numbers using Heap Sort method.
5. Apply Dynamic Programming Technique to
   a. Find a Transitive Closure of a Digraph using Warshall’s algorithm.
   b. Find all-pairs shortest path using Floyd’s algorithm.
6. Apply Greedy Technique to
   a. Compute a Minimum Spanning Tree using Prim’s algorithm.
   b. Compute a Minimum Spanning Tree using Kruskal’s algorithm.
   c. Find Single Source Shortest path using Dijkstra’s algorithm.
7. Apply Backtracking method to solve N-Queens Problem.
8. Apply Branch and Bound Technique to
   a. Solve Knapsack problem.
   b. Solve Traveling Salesperson Problem.
1. Simple Java Applications
   a. For understanding reference to an instance of a class(object), methods
   b. Handling Arrays and Vectors in Java
   c. Handling strings in Java

2. Simple Package Creation
   a. Developing user defined packages in java

3. Interface
   a. Developing user-defined interfaces and implementation
   b. Use of predefined interfaces

4. Threading
   a. Creation of thread in Java applications
   b. Multithreading

5. Exception Handling Mechanism
   a. Handling pre-defined exceptions
   b. Handling user-defined exceptions

6. Java Database Connectivity – Data Retrieval

7. File Operations

8. Applet
   a. Creation of Color Palette
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 inculcate the application of management concept through Operation Research for scaling new height.

**MODULE 1:**
Definition of Operation Research – scope of OR – Limitations of Operation Research – Linear Programming Problem (LPP) – Application of LPP in Management – Advantages of LPP (only theory)

**MODULE 2:**

**MODULE 3:**
Networking Concepts; Rules of drawing network diagram; CPM Computations – Finding critical path – Different Floats; PERT Computations: Computation of earliest and latest allowable times – probability of meeting the scheduled dates; difference between PERT and CPM – Crashing of a Project

**MODULE 4:**
Two person zero sum game: Solution to games: Saddle point – Dominance rule – Value of the game – mixed strategy – Graphical method of solving a game – (2 X n and m X 2) games – Replacement Theory - Replacement policy for gradually deteriorating items and for suddenly failing items.

**MODULE 5:**
Introduction- Characteristics of Queuing models – Models for Arrival and Service Times; Poisson arrival with Exponential Service Rate model – oxcer – Queuing models (Theory only) Inventory models – EOQ models.

**MODULE 6:**

**Text Books:**
OBJECTIVE: To inculcate the fundamental practices of good project management needed by software industry.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
**OBJECTIVE:** To make the students to understand the windows programming concepts including Microsoft Foundation Classes using Visual C++.

**MODULE 1:**

**MODULE 2:**

**MODULE 3:**

**MODULE 4:**

**MODULE 5:**

**MODULE 6:**

**Text Books:**
OBJECTIVE: To make the students to understand the fundamentals, environment and internals about UNIX Operating System.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
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:
114018 – UNIX AND NETWORK PROGRAMMING LAB

PART - A

1. Basic UNIX Commands
2. Shell Programming
3. Inter Process Communication (IPC)

PART - B

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

114019 – VISUAL PROGRAMMING LAB

Implement the following exercises using Visual C++

1. Writing code for keyboard and mouse events.
2. Dialog Based applications
3. Creating MDI applications
4. Threads
5. Document view Architecture, Serialization
6. Dynamic controls
7. Menu, Accelerator, Tool tip, Tool bar
8. Creating DLLs and using them
9. Data access through ODBC
10. Creating ActiveX control and using it
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.
OBJECTIVE: To provide basics for various techniques in Mobile Communications and Mobile Content services.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To explore different software components and their application.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To make the students to understand the concepts of Internet Programming and its related programming and scripting languages.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To provide a clear and in depth knowledge about the concepts underlying object-oriented systems development and design process.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
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.
Develop software for an application using typical CASE Tool by following Software Engineering methodology as given below:

1. Problem Statement
2. Requirements Analysis and specification
3. System design and modeling
4. System Implementation

Suggested list of applications:

1. Online Quiz System
2. Student Mark Analysis
3. ATM Banking
4. Online Ticket Reservation System
5. Course Registration
6. Stock Maintenance
7. Payroll Processing System

Note: -
Use UML diagrams for both Requirements specification and system design.
OBJECTIVE: To make the students to understand the techniques of soft computing in terms of its tolerance to imprecision and uncertainty.


Text Books:

References:
OBJECTIVE: To make the students to understand the fundamental concepts and principles of distributed computing.


References:
OBJECTIVE: To introduce an integrated approach to software development incorporating quality management methodologies.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books: