NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution Affiliated to Anna University Chennai)

K.R.NAGAR, KOVILPATTI – 628 503

REGULATIONS - 2011

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

CURRICULUM AND SYLLABI OF

M.C.A. – MASTER OF COMPUTER APPLICATIONS
## NATIONAL ENGINEERING COLLEGE, K.R.NAGAR, KOVILPATTI  
*(An Autonomous Institution affiliated to Anna University Chennai)*

**M.C.A. – Master of Computer Applications**

### SEMESTER - I

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MCA101</td>
<td>Computer Organization</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MCA102</td>
<td>Problem Solving and Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA103</td>
<td>Database Management Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MCA104</td>
<td>Data Structures</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MME102</td>
<td>Accounting and Financial Management</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Practical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MCA131</td>
<td>Programming and Data Structures Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MCA132</td>
<td>DBMS Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>15</td>
<td>1</td>
<td>6</td>
<td>20</td>
</tr>
</tbody>
</table>

### SEMESTER - II

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MMA201</td>
<td>Mathematical Foundations of Computer Science</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>MCA201</td>
<td>Object Oriented Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA202</td>
<td>Design and Analysis of Algorithms</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>MCA203</td>
<td>System Software</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MCA204</td>
<td>Operating Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>Practical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MCA231</td>
<td>Object Oriented Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MCA232</td>
<td>System Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MCA233</td>
<td>Algorithms Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>15</td>
<td>2</td>
<td>9</td>
<td>23</td>
</tr>
</tbody>
</table>
### SEMESTER - III

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MCA301</td>
<td>Computer Networks</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MCA302</td>
<td>Object Oriented Analysis and Design</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA303</td>
<td>Software Engineering</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MCA304</td>
<td>Computer Graphics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MCA305</td>
<td>Web Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MCA331</td>
<td>Graphics Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MCA332</td>
<td>Case Tools Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MCA333</td>
<td>Web Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>15</td>
<td>0</td>
<td>9</td>
<td>21</td>
</tr>
</tbody>
</table>

### SEMESTER - IV

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MCA401</td>
<td>Network Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MME401</td>
<td>Resource Management Techniques</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA402</td>
<td>Visual Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MCA403</td>
<td>Compiler Design</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>E-1</td>
<td>Elective</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MCA431</td>
<td>Visual Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MCA432</td>
<td>Network Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MCA433</td>
<td>Compiler Design Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>15</td>
<td>0</td>
<td>9</td>
<td>21</td>
</tr>
</tbody>
</table>
### SEMESTER - V

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MCA501</td>
<td>System Administration and Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MCA502</td>
<td>.NET Programming and Scripts</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA503</td>
<td>XML and Web Services</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>E-2</td>
<td>Elective</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>E-3</td>
<td>Elective</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MCA531</td>
<td>XML and Web Services Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MCA532</td>
<td>.NET Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MCA533</td>
<td>Mini Project Work</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>0</td>
<td>9</td>
<td>21</td>
</tr>
</tbody>
</table>

### SEMESTER - VI

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCA631</td>
<td>Project Work</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>12</td>
</tr>
</tbody>
</table>

TOTAL CREDITS TO BE EARNED FOR THE AWARD OF THE DEGREE - 118
## LIST OF ELECTIVES FOR M.C.A.
### (MASTER OF COMPUTER APPLICATIONS)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>MMA001</td>
<td>Numerical and Statistical Methods</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>MCA001</td>
<td>Electronic Commerce</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MCA002</td>
<td>Information Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MCA003</td>
<td>Web Graphics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MME001</td>
<td>Human Resource Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>MCA004</td>
<td>Advanced Databases</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>MCA005</td>
<td>Software Quality Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>MCA006</td>
<td>TCP/IP Design and Implementation</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>MCA007</td>
<td>Distributed Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>MCA008</td>
<td>Data Mining and Data Warehousing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>MCA009</td>
<td>Component Based Technology</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>MME002</td>
<td>Managerial Economics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>MCA010</td>
<td>Mobile Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>MCA011</td>
<td>Digital Imaging</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>MCA012</td>
<td>Enterprise Resource Planning</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>16.</td>
<td>MCA013</td>
<td>Agent Based Intelligent Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>MCA014</td>
<td>Natural Language Processing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>18.</td>
<td>MCA015</td>
<td>Software Agents</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>19.</td>
<td>MCA016</td>
<td>Supply Chain Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>MCA017</td>
<td>Healthcare Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>MME003</td>
<td>Portfolio Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>22.</td>
<td>MCA018</td>
<td>Unix Internals</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>23.</td>
<td>MCA019</td>
<td>Artificial Intelligence</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>24.</td>
<td>MCA020</td>
<td>Parallel and Distributed Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>25.</td>
<td>MCA021</td>
<td>Soft Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>26.</td>
<td>MCA022</td>
<td>Software Project Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>27.</td>
<td>MCA023</td>
<td>Professional Ethics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
MCA101 COMPUTER ORGANIZATION L T P C 3 0 0 3

Objectives:

1. To study the Digital fundamentals
2. To understand the concepts and issues of Computer Organization and Architecture together

UNIT I DIGITAL FUNDAMENTALS 8

UNIT II COMBINATIONAL AND SEQUENTIAL CIRCUITS 10

UNIT III BASIC STRUCTURE OF COMPUTERS 9

UNIT IV PROCESSOR DESIGN 9
Processor basics – CPU Organization – Data path design – Control design – Basic concepts – Hard wired control – Micro programmed control – Pipeline control – Hazards – Super scalar operation.

UNIT V MEMORY AND I/O SYSTEM 9

TOTAL = 45

TEXT BOOKS:


REFERENCES:

**MCA102 PROBLEM SOLVING AND PROGRAMMING**

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Objectives:
1. To learn and analyze problems and to formulate algorithms.
2. To introduce computer systems with emphasis on hardware,
3. To learn about numerical methods used to solve engineering problems with the help of computer programs.

**UNIT I INTRODUCTION TO PROGRAMMING**

**UNIT II PROGRAMMING PARADIGMS**

**UNIT III PROBLEM SOLVING TECHNIQUES**

**UNIT IV C PROGRAMMING FUNDAMENTALS**

**UNIT V ADVANCED FEATURES**

**TOTAL = 45**

**REFERENCES:**
MCA103 DATABASE MANAGEMENT SYSTEMS

Objectives:
1. To understand Database design and normalization techniques.
2. To use Standard Query Language and its various versions.
3. To understand Importance of backup and recovery techniques.
4. To develop Database system to handle the real world problem.

UNIT I INTRODUCTION
Historical perspective - Files versus database systems - Architecture - E-R model - Security and Integrity - Data models.

UNIT II RELATIONAL MODEL
The relation - Keys - Constraints - Relational algebra and Calculus - Queries - Programming and triggers.

UNIT III DATA STORAGE
Disks and Files - file organizations - Indexing - Tree structured indexing - Hash based indexing.

UNIT IV QUERY EVALUATION AND DATABASE DESIGN
External sorting - Query evaluation - Query optimization - Schema refinement and normalization - Physical database design and tuning - Security.

UNIT V TRANSACTION MANAGEMENT
Transaction concepts - Concurrency control - Crash recovery - Decision support – Case studies.

REFERENCES:
MCA104 DATA STRUCTURES L T P C
3 0 0 3

Objectives:

1. To analyze the usage of different data structures and algorithm design methods which impacts the performance of programs.
2. To teach how to choose the appropriate data structure and algorithm design method for a specified application.
3. Write programs using object oriented design principles.
4. To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking, and branch and bound and writing programs for these solutions.

UNIT I DATA STRUCTURES 9

UNIT II TREES 9

UNIT III SORTING AND SEARCHING 9

UNIT IV GRAPHS AND THEIR APPLICATIONS 9

UNIT V STORAGE MANAGEMENT 9
General Lists: Operations, linked list representation, using lists, Freeing list nodes - Automatic list Management: Reference count method, Garbage Collection, Algorithms, Collection and compaction

TOTAL = 45

TEXTBOOK:


REFERENCES:

MME102  ACCOUNTING AND FINANCIAL MANAGEMENT  L T P C  3 1 0 4

Objectives:
1. To understand the scope of accounting and its principles
2. To study the various analysis methods in accounting
3. To study the various budgeting and computerized accounting
4. To know about the working capital management

UNIT I  FINANCIAL ACCOUNTING  12

UNIT II  ACCOUNTING  12

UNIT III  BUDGETS AND BUDGETING CONTROL  12
Budgets and Budgetary Control-Meaning-Types-Sales Budget-Production Budget-Cost of Production Budget-Flexible Budgeting-Cash Budget-Master Budget-Zero Base Budgeting-Computerized Accounting

UNIT IV  INVESTMENT DECISION AND COST OF CAPITAL  12

UNIT V FINANCING DECISION AND WORKING CAPITAL MANAGEMENT  12

TUTORIAL = 15  TOTAL = 60

TEXTBOOK:

REFERENCE:
MCA131  PROGRAMMING AND DATA STRUCTURES LABORATORY  L T P C  0 0 3 2

Lab Objectives:
1. Learn how to implement some useful concepts of data structures
2. To implement various sorting techniques.
3. To understand the effect of data structures on an algorithm’s complexity.

List of Experiments:
1. Stack and Queue
2. Binary tree Traversals
3. Merge Sort
4. DFS and BFS
5. Warshall’s Algorithm
6. Dijkstra’s Algorithm
7. Huffman’s Algorithm
8. Insertion Sort

Required Software:  C, C++
Lab Objectives:
To understand the fundamentals as well as advanced concepts of Databases, Oracle, SQL Server and MS-Access.

List of Experiments:
1. Creation of base tables and views.
2. Data Manipulation
   - INSERT, DELETE and UPDATE in tables
   - SELECT, Sub Queries and JOIN
3. Data Control Commands
4. High level language extensions – PL/SQL, Or Transact SQL
5. Use of Cursors, Procedures and Functions
6. Embedded SQL or Database Connectivity.
7. Oracle or SQL Server Triggers.
8. Working with Forms, Menus and Reports.

Required Software: Oracle 9i, SQL Server and MS-Access
MMA201     MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

LT P C    3 1 0 4

UNIT I  MATRIX ALGEBRA    12
Matrices, Rank of Matrix, Solving System of Equations - Eigen Values and Eigen Vectors -
Inverse of a Matrix - Cayley Hamilton Theorem

UNIT II  BASIC SET THEORY    12
Basic Definitions - Venn Diagrams and set operations - Laws of set theory - Principles of
inclusion and exclusion – partitions - Permutation and Combination - Relations-Properties of
relations - Matrices of relations - Closure operations on relations -Functions - injective,
surjective and bijective functions.

UNIT III  MATHEMATICAL LOGIC    12
Propositions and logical operators - Truth table - Propositions generated by a set, Equivalence
and implication - Basic laws- Some more connectives – Functionaly complete set of connectives-
Normal forms - Proofs in Propositional calculus – Predicate calculus.

UNIT IV  FORMAL LANGUAGES    12
Languages and Grammars - Phrase Structure Grammar - Classification of Grammars- Pumping
Lemma For Regular Languages - Context Free Languages.

UNIT V  FINITE STATE AUTOMATA    12
Finite State Automata - Deterministic Finite State Automata(DFA), Non Deterministic Finite
State Automata (NFA) - Equivalence of DFA and NFA - Equivalence of NFA and Regular
Languages.

LECTURE HOUR = 45   TUTORIAL = 15        TOTAL=60

REFERENCES:

   Edition, 2002 (Units 1,2 & 3).
2. Hopcroft and Ullman, “Introduction to Automata Theory, Languages and Computation”,
   Narosa Publishing House, Delhi, 2002. (Units 4,5)
MCA201  OBJECT ORIENTED PROGRAMMING

UNIT I  FUNDAMENTALS  9
Object oriented programming concepts - objects - classes – methods and messages - abstraction and encapsulation - inheritance - abstract classes - polymorphism. Introduction to C++ - classes – access specifiers – function and data members - default arguments - function overloading - friend functions – const and volatile functions - static members – Objects – pointers and objects – constant objects – nested classes - local classes

UNIT II  IMPLEMENTING ADTS AND ENCAPSULATION  9
Constructors - default constructor - Parameterized constructors - Constructor with dynamic allocation – copy constructor – destructors – operator overloading - overloading through friend functions – overloading the assignment operator – type conversion - explicit constructor

UNIT III  POLYMORPHISM  9
Function and class templates - Exception handling – try-catch-throw paradigm – exception specification – terminate and unexpected functions – Uncaught exception.

UNIT IV  TEMPLATES  9

UNIT V  INHERITANCE  9

TOTAL = 45

TEXT BOOK:


REFERENCES:

MCA202 DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I INTRODUCTION

UNIT II DIVIDE AND CONQUER METHOD AND GREEDY METHOD

UNIT III DYNAMIC PROGRAMMING

UNIT IV BACKTRACKING AND BRANCH AND BOUND

UNIT V NP-HARD AND NP-COMPLETE PROBLEMS

LECTURE HOUR = 45 TUTORIAL = 15 TOTAL = 60

TEXT BOOK:

REFERENCE:
MCA203   SYSTEM SOFTWARE

UNIT I   INTRODUCTION

UNIT II   ASSEMBLERS

UNIT III   LOADERS AND LINKERS

UNIT IV   MACRO PROCESSORS

UNIT V   OTHER SYSTEM SOFTWARE

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA204 OPERATING SYSTEMS

UNIT I INTRODUCTION
Introduction – Operating Systems and services – Processes – CPU Scheduling Approaches

UNIT II PROCESS SYNCHRONIZATION
Process synchronization – Semaphores – Deadlocks – Handling deadlocks – Multithreading

UNIT III MEMORY MANAGEMENT

UNIT IV DISK SCHEDULING
Disk Scheduling approaches – File systems – Design issues – User interfaces to file systems – I/O device management.

UNIT V CASE STUDIES

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA231  OBJECT ORIENTED PROGRAMMING LABORATORY  L T P C

0 0 3 2

1. Implementation of Enumeration and Function Overloading.
2. Implementation of Scope and Storage class
3. Implementation of ADT such as Stack and Queues
4. Implementation of the use of Constructors, Destructors and Constructor Overloading
5. Implementation of Static member and methods
6. Implementation of Bit fields
7. Implementation of overload as binary operator, friend and member function
8. Implementation of overload unary operator in Postfix and Prefix form as member and friend function
9. Implementation of Iterators and Containers
10. Implementation of function templates
11. Implementation of template class
12. Implementation of various forms of Inheritance
13. Implementation of Virtual functions
14. Implementation of Exception Handling
MCA232 SYSTEM PROGRAMMING LABORATORY

1. Implementation of Assemblers.
2. Implementation of Linkers.
3. Implementation of Loaders.
4. Implementation of text editor’s features
5. Implementation of Basic UNIX commands.
7. Implementation of Grep, sed, awk commands
8. Implementation of File system related system calls.
10. Implementation of Message queues.
11. Implementation of Pipe, FIFO’s.
12. Implementation of Signals.
13. Implementation of Shared memory concept.
MCA233  ALGORITHMS LABORATORY

1. Implementation of Quick Sort
2. Implementation of Binary Search
3. Implementation of Binary Tree Traversal
4. Implementation of Warshall’s Algorithm
5. Implementation of Dijkstra’s Algorithm
6. Implementation of Prim’s Algorithm
7. Implementation of Knapsack Problem – Dynamic Programming
8. Implementation of Subset Sum Problem – Backtracking
9. Implementation of travelling salesperson problem – Branch and Bound
10. Implementation of Strassen’s matrix multiplication
MCA301 COMPUTER NETWORKS

UNIT I INTRODUCTION 9

UNIT II NETWORK FUNDAMENTALS 9

UNIT III NETWORK LAYER 9

UNIT IV TRANSPORT LAYER 9

UNIT V APPLICATIONS 9

TOTAL = 45

TEXT BOOK:

REFERENCE:
MCA302 OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT I INTRODUCTION

UNIT II METHODOLOGY AND UML

UNIT III OBJECT ORIENTED ANALYSIS
Identifying Use case – Business object analysis – Use case driven object oriented analysis – Use case model – Documentation – Classification – Identifying object, relationships, attributes, methods – Super-sub class – A part of relationships Identifying attributes and methods – Object responsibility

UNIT IV OBJECT ORIENTED DESIGN
Design process – Axioms – Corollaries – Designing classes – Class visibility – Refining attributes – Methods and protocols – Object storage and object interoperability Databases – Object relational systems – Designing interface objects – Macro and Microlevel processes – The purpose of a view layer interface

UNIT V SOFTWARE QUALITY

TOTAL=45

TEXT BOOK:

REFERENCES:
MCA303 SOFTWARE ENGINEERING

LT P C
3 0 0 3

UNIT I INTRODUCTION

UNIT II SOFTWARE DESIGN

UNIT III SOFTWARE METRICS

UNIT IV SOFTWARE TESTING AND MAINTENANCE

UNIT V SOFTWARE CONFIGURATION MANAGEMENT (SCM) AND CASETOOLS

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA304 COMPUTER GRAPHICS

UNIT I INTRODUCTION
I/O devices – I/O primitives – Attributes of output primitives – DDA – Bresenham technique – Circle drawing algorithms – Interactive input methods.

UNIT II 2D GRAPHICS

UNIT III 3D GRAPHICS

UNIT IV OVERVIEW OF MULTIMEDIA

UNIT V MULTIMEDIA SYSTEMS AND APPLICATIONS

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA305  WEB PROGRAMMING  LT P C  3 0 0 3

UNIT I  BASIC INTERNET CONCEPTS  8
Connecting to the Internet – Domain Name System - Exchanging E-mail – Sending and Receiving Files - Fighting Spam, Sorting Mail and avoiding e-mail viruses – Chatting and Conferencing on the Internet – Online Chatting - Messaging – Usenet Newsgroup – Internet Relay chat (IRC) – Instant Messaging - Voice and Video Conferencing.

UNIT II  WORLD WIDE WEB  8

UNIT III  JAVA FUNDAMENTALS  8

UNIT IV  PACKAGES  12

UNIT V  ADVANCED JAVA PROGRAMMING  9

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MCA331 GRAPHICS LABORATORY

1. IMPLEMENTATION OF THE FOLLOWING ALGORITHMS
   a) Line b) Circle c) Ellipse.

2. TWO DIMENSIONAL TRANSFORMATIONS:
   Creation of two dimensional objects and applying simple transformations like Translation, Scaling, Rotation and applying Composite transformations.

3. THREE DIMENSIONAL TRANSFORMATIONS:
   Creation of simple three dimensional objects like cube, cone and cylinder and applying simple transformations like Translation, Scaling, Rotation and applying Composite transformations.

4. VISIBLE SURFACE DETECTION:
   Finding out visible surfaces and removal of hidden surfaces in simple objects using object space and image space algorithms.

5. IMAGE EDITING:
   Image enhancement, Image transformation from color to gray scale and vice versa, Image manipulation and Image optimization for web - Usage of editing tools, layers, filters, special effects and color models. Creation of simple gif animated images with textual illustrations.
MCA332       CASE TOOLS LABORATORY

1. Practicing the different types of case tools such as Rational Rose and other Open Source used for all the phases of Software development life cycle.
2. Data modeling
3. Semantic data modeling
4. Source code generators
5. Re-engineering
6. Experiments in CASE Environments
   a. Toolkits
   b. Language-centered
   c. Integrated
   d. Fourth generation
   e. Process-centered
7. Implementation of the following using CASE Work benches:
   a. Business planning and modeling
   b. Analysis and design
   c. User-interface development
   d. Programming
   e. Verification and validation
   f. Maintenance and reverse engineering
   g. Configuration management
   h. Project management
MCA333 WEB PROGRAMMING LABORATORY

1. Study of internet connection procedures
2. Send and receive mails from one or more email clients
3. Video Conferencing demonstration
4. Downloading and installing softwares (Example: Java) and setting up path and class path
5. Implementation of FTP
6. Creation of web site with forms, frames, links, tables etc with any web page editors and using images and audio files as part of web pages
7. Writing Java programs by making use of class, interface, package, etc for the following
   a. Different types of inheritance study
   b. Uses of ‘this’ keyword
   c. Polymorphism
   d. Creation of user specific packages
   e. Creation of jar files and using them
   f. User specific exception handling
8. Writing window based GUI applications using frames and applets such as Calculator application, Fahrenheit to Centigrade conversion etc
9. Application of threads examples
10. Implementation of reading and writing text files
11. Reading image files and manipulating them with image related classes and methods
12. Implementation of RMI application to access a remote method
13. Implementation of Servlet program with database connectivity for a web based application such as students result status checking, PNR number enquiry etc
14. Creation and usage of Java bean
MCA401 NETWORK PROGRAMMING

UNIT I INTRODUCTION

UNIT II ELEMENTARY TCP SOCKETS

UNIT III APPLICATION DEVELOPMENT

UNIT IV SOCKET OPTIONS, ELEMENTARY UDP SOCKETS

UNIT V ADVANCED SOCKETS

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MME401 RESOURCE MANAGEMENT TECHNIQUES

UNIT I LINEAR PROGRAMMING MODELS
Mathematical Formulation - Graphical Solution of linear programming models – Simplex method – Artificial variable Techniques- Variants of Simplex method

UNIT II TRANSPORTATION AND ASSIGNMENT MODELS
Mathematical formulation of transportation problem- Methods for finding initial basic feasible solution – optimum solution - degeneracy – Mathematical formulation of assignment models – Hungarian Algorithm – Variants of the Assignment problem

UNIT III INTEGER PROGRAMMING MODELS
Formulation – Gomory’s IPP method – Gomory’s mixed integer method – Branch and bound technique.

UNIT IV SCHEDULING BY PERT AND CPM

UNIT V QUEUEING MODELS
Characteristics of Queuing Models – Poisson Queues - (M / M / 1) : (FIFO / / ), (M / M / 1) : (FIFO / N / ), (M / M / C) : (FIFO / / ) models.

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MCA402 VISUAL PROGRAMMING  LT P C  3 0 0 3

UNIT I  WINDOWS PROGRAMMING  8

UNIT II  VISUAL BASIC PROGRAMMING  10

UNIT III  VISUAL C++ PROGRAMMING  9

UNIT IV  CONTROLS  9

UNIT V  ADVANCED CONCEPTS  9

TOTAL =45

TEXT BOOKS:

REFERENCES:
MCA403  COMPILER DESIGN  L T P C  3 0 0 3

UNIT I  LEXICAL ANALYSIS  9

UNIT II  SYNTAX ANALYSIS  9
Role of a Parser – Context Free Grammars – Top-Down Parsing – Bottom-Up Parsing – LEX and YACC.

UNIT III  INTERMEDIATE CODE GENERATION  9

UNIT IV  CODE OPTIMIZATION  9

UNIT V  CODE GENERATION  9

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA431  VISUAL PROGRAMMING LABORATORY

VB:
1. Form Design – Keyboard & Mouse events
2. Programs on usage of data types - variant, Control arrays
3. Simple applications using file system controls
4. Database applications using data control.

VC++:
1. SDK type programs for creating simple windows with different window styles
2. SDK type programs code for keyboard and mouse events, GDI objects.
3. Simple Dialog Based application – eg. Calculator, interest computation, money conversions, etc.
4. Creating SDI and MDI applications, Modal and Modeless dialog.
5. Programming for reading and writing into documents.
7. Creating static and dynamic splitter windows
8. Creating DLLs and using them.
9. Winsock and WinInet & Internet Explorer common controls.
10. Data access through ODBC – Cdatabase, Crecordset.
11. Creating ActiveX control and using it.
MCA432  NETWORK PROGRAMMING LABORATORY  

LT P C  
0 0 3 2  

1. Socket Programming  
   a. TCP Sockets  
   b. UDP Sockets  
   c. Applications using Sockets  
2. Simulation of Sliding Window Protocol  
3. Simulation of Routing Protocols  
4. Implementation of RPC  
5. Development of applications such as DNS/ HTTP/ E-mail/ Multi-user Chat
MCA433     COMPILER DESIGN LABORATORY

L T P C
0 0 3 2

1 & 2  Implement a lexical analyzer in “C”.
3. Use LEX tool to implement a lexical analyzer.
4. Implement a recursive descent parser for an expression grammar that generates
   arithmetic expressions with digits, + and *.
5. Use YACC and LEX to implement a parser for the same grammar as given in
   problem
6. Write semantic rules to the YACC program in problem 5 and implement a
   calculator that takes an expression with digits, + and * and computes and prints its
   value.
7 & 8. Implement the front end of a compiler that generates the three address code for
   a simple language with: one data type integer, arithmetic operators, relational
   operators, variable declaration statement, one conditional construct, one
   iterative construct and assignment statement.
9 &10. Implement the back end of the compiler which takes the three address code
   generated in problems 7 and 8, and produces the 8086 assembly language
   instructions that can be assembled and run using a 8086 assembler. The target
   assembly instructions can be simple move, add, sub, jump. Also simple
   addressing modes are used.
MCA501 SYSTEM ADMINISTRATION AND MANAGEMENT  

L T P C  
3 0 0 3  

UNIT I SYSTEM ADMINISTRATION AND ETHICS  

UNIT II DATABASE ADMINISTRATION  

UNIT III SYSTEM INFRASTRUCTURE DESIGN  

UNIT IV NETWORK ADMINISTRATION  

UNIT V LINUX FILE SYSTEM MANAGEMENT  
File System Organizations and File Types – File System Configuration – Optimizing storage and data access – Logical volume manager.  

TOTAL = 45  

TEXT BOOKS:  
1. Mark Burgess, “Principles of network and system administration”, John Wiley and Sons, 2004. (For Unit I)  

REFERENCES:  
# MCA502 .NET PROGRAMMING AND SCRIPTS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>THE CLR AND THE .NET FRAMEWORK</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Assemblies, Versioning, Attributes, Reflection, Viewing MetaData, Type Discovery, Reflecting on a Type, Marshaling, Remoting, Understanding Server Object Types, Specifying a Server with an Interface, Building a Server, Building the Client, Using SingleCall, Threads.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ADO .NET</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>ASP .NET</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>JAVA SERVER PAGE</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>J2EE and web services - Introduction to JSP and java servlets – servlets – overview of Java server pages</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>ACTIVE SERVER PAGES</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>HTML and VB Script fundamentals – ASP concepts, using request, response, application, session, server objects – using cookies</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL = 45**

**TEXT BOOKS:**


**REFERENCES:**

MCA503  XML AND WEB SERVICES  
L T P C 
3 0 0 3 

UNIT I  INTRODUCTION  
9

UNIT II  XML TECHNOLOGY  
9

UNIT III  SOAP  
9

UNIT IV  WEB SERVICES  
9

UNIT V  XML SECURITY  
9

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MCA531  XML AND WEB SERVICES LABORATORY

1. Create an XML document to store an address book.
2. Create an XML document to store information about books and create the DTD files.
4. Create an XML document to store resumes for a job web site and create the DTD file.
7. Use Microsoft DOM to navigate and extract information from the book’s XML document.
8. Use Microsoft DSO to connect HTML form or VB form to the book’s XML document and display the information.
9. Create a web service for temperature conversion with appropriate client program.
10. Create a web service for currency conversion (at five currencies) with appropriate client program.
MCA532 .NET PROGRAMMING LABORATORY

1. Implement an ASP.NET Application to validate the form using controls.
2. Write a program for Stock Market Exchange Using ASP.NET.
3. Design an application for a library management system using ADO.NET.
4. Implement a VB.NET program to display the Web Controls.
   - A List Box
   - A Button
   - An Image
   - A Label
   - A TextBox
5. Write a program for data Encryption and Decryption using VB.NET.
6. Design an application using VB.NET and connect with database.
7. Design a web application in ASP using IIS server.
8. Design a web application in ASP using ADO.
9. Implementation of online applications using JSP.
10. Write a JSP program using JavaBeans.
MMA001  NUMERICAL AND STATISTICAL METHODS

UNIT I  LINEAR SYSTEM OF EQUATIONS

UNIT II  NUMERICAL DIFFERENTIATION AND INTEGRATION

UNIT III  DIFFERENTIAL EQUATIONS

UNIT IV  PROBABILITY DISTRIBUTIONS
Probability axioms- Bayes Theorem- Discrete random variables and Continuous random variables – Density and Distribution functions - Joint and marginal distributions - Conditional distributions - Characteristic function- moment generating function expectation.

UNIT V  SAMPLING DISTRIBUTIONS
Small sample, t-test, F-test, x2–test, ANOVA one way classification and two way Classification.

TOTAL = 60

TEXT BOOKS:

REFERENCES:
MCA001 ELECTRONIC COMMERCE

UNIT I INTRODUCTION

UNIT II SECURITY TECHNOLOGIES

UNIT III ELECTRONIC PAYMENT METHODS

UNIT IV ELECTRONIC COMMERCE PROVIDERS

UNIT V ONLINE COMMERCE ENVIRONMENTS

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA002 INFORMATION SYSTEMS

UNIT I INFORMATION SYSTEM AND ORGANIZATION

UNIT II REPRESENTATION AND ANALYSIS OF SYSTEM STRUCTURE

UNIT III SYSTEMS, INFORMATION AND DECISION THEORY

UNIT IV INFORMATION SYSTEM APPLICATION

UNIT V DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEMS

TOTAL=45

TEXT BOOKS:

REFERENCES:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>LT P C</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCA003</td>
<td>WEB GRAPHICS</td>
<td>3 0 0 3</td>
<td>9</td>
</tr>
</tbody>
</table>

**UNIT I  INTRODUCTION**
HTML coding - Basic web graphics - Web page design and site building - Image maps - Adding multimedia to the web - Vector and Raster graphics.

**UNIT II  RASTER IMAGE EDITING SOFTWARE**

**UNIT III  VECTOR IMAGE HANDLING**

**UNIT IV  MULTIMEDIA**
Creating clippings - Animations with sound effects - Adding audio or Video – Windows Media Player ActiveX Control - Agent control - Embedding VRML in a web page – Real Player ActiveX control.

**UNIT V  APPLICATIONS**
Website creation – concept – design issues – theme – utilities – Interactive animation – Design and development

**TOTAL = 45**

**TEXT BOOK:**

**REFERENCES:**
MME001  HUMAN RESOURCE MANAGEMENT

UNIT I  PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT
Types of training, methods, purpose, benefits and resistance. Executive development programmes – common practices - benefits – self development – knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS

TEXT BOOKS:

REFERENCES:
MCA004      ADVANCED DATABASES                           LT PC
                                                3 0 0 3

UNIT I      PARALLEL AND DISTRIBUTED DATABASES          9

UNIT II     OBJECT AND OBJECT RELATIONAL DATABASES      9

UNIT III    XML DATABASES                              9

UNIT IV     MOBILE DATABASES                           9
Mobile Databases: Location and Handoff Management - Effect of Mobility on Data Management - Location Dependent Data Distribution - Mobile Transaction Models - Concurrency Control - Transaction Commit Protocols- Mobile Database Recovery Schemes

UNIT V      MULTIMEDIA DATABASES                       9

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA005 SOFTWARE QUALITY MANAGEMENT

UNIT I FUNDAMENTALS OF SOFTWARE QUALITY ENGINEERING

UNIT II DEVELOPMENTS IN MEASURING QUALITY

UNIT III QUALITY MANAGEMENT SYSTEM

UNIT IV PRINCIPLES AND PRACTICES IN QMS

UNIT V MEASURES AND METRICS IN PROCESS AND PROJECT DOMAINS

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA006 TCP/IP DESIGN AND IMPLEMENTATION

UNIT I INTRODUCTION

UNIT II TCP

UNIT III IP IMPLEMENTATION
IP global software organization – routing table – routing algorithms – fragmentation and reassembly – error processing (ICMP) – Multicast Processing (IGMP).

UNIT IV TCP IMPLEMENTATION I
Data structure and input processing – transmission control blocks– segment format–comparison– finite state machine implementation – Output processing – mutual exclusion– computing the TCP data length.

UNIT V TCP IMPLEMENTATION II

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MCA007  DISTRIBUTED SYSTEMS

UNIT I  COMMUNICATION IN DISTRIBUTED ENVIRONMENT  8

UNIT II  DISTRIBUTED OPERATING SYSTEMS  12

UNIT III  DISTRIBUTED RESOURCE MANAGEMENT  10
Distributed Shared Memory – Data-Centric Consistency Models – Client-Centric Consistency Models – Ivy – Munin – Distributed Scheduling – Distributed File Systems - Sun NFS.

UNIT IV  FAULT TOLERANCE AND CONSENSUS  7

UNIT V  CASE STUDIES  8
Distributed Object -Based System – CORBA – COM+ – Distributed Coordination - Based System – JINI.

TOTAL= 45

TEXT BOOK:

REFERENCES:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>LTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCA008</td>
<td>DATA MINING AND DATA WAREHOUSING</td>
<td>3003</td>
</tr>
</tbody>
</table>

**UNIT I**  

**UNIT II**  

**UNIT III**  

**UNIT IV**  

**UNIT V**  

**TOTAL = 45**

**TEXT BOOKS:**
2. Jiawei Han, Micheline Kamber, and Jian Pei, “Data Mining: Concepts and Techniques”, 3rd Edition, Morgan Kaufmann, 2011. [Unit 2,3 and 4]

**REFERENCE:**
MCA009 COMPONENT BASED TECHNOLOGY

UNIT I INTRODUCTION 9
Software Components – objects – fundamental properties of Component technology – modules –
interfaces – callbacks – directory services – component architecture – components and
middleware.

UNIT II JAVA COMPONENT TECHNOLOGIES 9
reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and
RMI-IIOP.

UNIT III CORBA TECHNOLOGIES 9
Java and CORBA – Interface Definition language – Object Request Broker – system object
model – portable object adapter – CORBA services – CORBA component model – containers –
application server – model driven architecture.

UNIT IV COM AND .NET TECHNOLOGIES 9
COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces –
connectable objects – OLE containers and servers – ActiveX controls – .NET components -

UNIT V COMPONENT FRAMEWORKS AND DEVELOPMENT 9
Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component
framework – directory objects – cross-development environment – component-oriented
programming – Component design and implementation tools – testing tools - assembly tools.

TOTAL= 45

TEXT BOOK:

REFERENCES:
MME002  MANAGERIAL ECONOMICS

UNIT I  INTRODUCTION TO MANAGERIAL ECONOMICS

UNIT II  SUPPLY, PRODUCTION AND COST ANALYSIS

UNIT III  MARKET STRUCTURE AND PRICE DETERMINATION

UNIT IV  PROFIT AND INVESTMENT ANALYSIS

UNIT V  MACROECONOMIC ISSUE

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA010 MOBILE COMPUTING

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS 9

UNIT II TELECOMMUNICATION SYSTEMS 11

UNIT III WIRELESS NETWORKS 9

UNIT IV NETWORK LAYER 9

UNIT V TRANSPORT AND APPLICATION LAYERS 7

TOTAL= 45

TEXT BOOKS:

REFERENCES:
MCA011 DIGITAL IMAGING

UNIT I FUNDAMENTALS OF IMAGE PROCESSING

UNIT II IMAGE ENHANCEMENT

UNIT III IMAGE SEGMENTATION AND FEATURE ANALYSIS

UNIT IV MULTI RESOLUTION ANALYSIS AND COMPRESSIONS

UNIT V APPLICATIONS OF IMAGE PROCESSING

TOTAL= 45

TEXT BOOK:

REFERENCES:
MCA012 ENTERPRISE RESOURCE PLANNING

UNIT I INTRODUCTION TO ERP

UNIT II ERP IMPLEMENTATION

UNIT III BUSINESS MODULES

UNIT IV ERP MARKET

UNIT V ERP – PRESENT AND FUTURE
Turbo Charge the ERP System – EIA – ERP and E–Commerce – ERP and Internet –Future Directions in ERP.

TOTAL= 45

TEXT BOOK:

REFERENCES:
MCA013 AGENT BASED INTELLIGENT SYSTEMS

UNIT I INTRODUCTION

UNIT II KNOWLEDGE REPRESENTATION AND REASONING
Logical Agents - First order logic - First Order Inference - Unification – Chaining - Resolution Strategies - Knowledge Representation – Objects – Actions - Events

UNIT III PLANNING AGENTS

UNIT IV AGENTS AND UNCERTAINTY

UNIT V HIGHER LEVEL AGENTS
Knowledge in Learning-Relevance Information - Statistical Learning Methods -Reinforcement Learning - Communication-Formal Grammar - Augmented Grammars - Future of AI.

TOTAL= 45

TEXT BOOK:

REFERENCES:
MCA014  NATURAL LANGUAGE PROCESSING  LT P C  3 0 0 3

UNIT I  INTRODUCTION

UNIT II  INFORMATION RETRIEVAL

UNIT III  TEXT MINING
Categorization – Extraction based Categorization - Clustering- Hierarchical Clustering - Document Classification and routing - finding and organizing answers from Text search – use of categories and clusters for organising retrieval results – Text Categorization and efficient Summarization using Lexical Chains – Pattern Extraction.

UNIT IV  GENERIC ISSUES

UNIT V  APPLICATIONS

TOTAL = 45

TEXT BOOKS:


REFERENCES:

MCA015 SOFTWARE AGENTS

UNIT I AGENTS – OVERVIEW
Agent Definition – Agent Programming Paradigms – Agent Vs Object – Aglet – Mobile Agents – Agent Frameworks – Agent Reasoning.

UNIT II JAVA AGENTS

UNIT III MULTIAGENT SYSTEMS

UNIT IV INTELLIGENT SOFTWARE AGENTS
Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications.

UNIT V AGENTS AND SECURITY

REFERENCES:

TOTAL = 45
MCA016    SUPPLY CHAIN MANAGEMENT

UNIT I    BUILDING BLOCKS, PERFORMANCE MEASURES, DECISIONS  9
Building Blocks of a Supply Chain Network – Performance Measures – Decisions in the Supply

UNIT II    SUPPLY CHAIN INVENTORY MANAGEMENT  9
Economic Order Quantity Models – Reorder Point Models – Multichelon Inventory Systems.

UNIT III    MATHEMATICAL FOUNDATIONS OF SUPPLY CHAIN SOLUTIONS  9
Use of Stochastic Models and Combinatorial Optimization in Supply Chain Planning – Supply
Chain Facilities Layout – Capacity Planning – Inventory Optimization – Dynamic Routing and
Scheduling – Understanding the "internals" of industry best practice solutions.

UNIT IV    INTERNET TECHNOLOGIES AND ELECTRONIC COMMERCE IN SCM  9
business process optimization – Business objects in SCM.

UNIT V    CASE STUDIES  9
Digital Equipment Case Study – IBM Case Study.

TOTAL = 45

TEXT BOOKS:

REFERENCES:
MCA017 HEALTHCARE SYSTEMS

UNIT I INTRODUCTION
Introduction to health care information – Health care data quality – Health care information regulations, laws and standards.

UNIT II HEALTH CARE INFORMATION SYSTEMS
History and evolution of health care information systems – Current and emerging use of clinical information systems – system acquisition – System implementation and support.

UNIT III INFORMATION TECHNOLOGY
Information architecture and technologies that support health care information systems – Health care information system standards – Security of health care information systems.

UNIT IV MANAGEMENT OF IT CHALLENGES
Organizing information technology services – IT alignment and strategic planning – IT governance and management.

UNIT V IT INITIATIVES
Management’s role in major IT initiatives – Assessing and achieving value in health care information systems.

TOTAL = 45

TEXT BOOK:

REFERENCE:
MME003  PORTFOLIO MANAGEMENT  

UNIT I  MONEY AND CAPITAL MARKETS  
Trends of savings and financial flow, the Indian Money market, introduction, characteristics of money market, need for money market, major segments of money market, money market instruments and Capital market, introduction, primary market and secondary market, recent capital market reforms, new capital issue, instruments and market participant.

UNIT II  STOCK EXCHANGES  

UNIT III  FUNDAMENTAL ANALYSIS  

UNIT IV  TECHNICAL ANALYSIS  

UNIT V  PORTFOLIO ANALYSIS  
Portfolio theory- Markowitz theory, Sharpe index model, CAPM. Portfolio investment model- basic principles, planning, implementation, portfolio objective and types. Portfolio evaluation – measures of return, formula plans, types of formula plans. Risk adjusted measure of performance – Sharpe’s measure, Treynor’s measure and Jensen’s measure

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA018  UNIX INTERNALS

UNIT I  OVERVIEW

UNIT II  FILE SUBSYSTEM

UNIT III  SYSTEM CALLS FOR THE FILE SYSTEM

UNIT IV  PROCESSES

UNIT V  MEMORY MANAGEMENT AND I/O

TOTAL = 45

TEXT BOOK:
1. Maurice J. bach, “The design of the unix operating system”, Prentice Hall of India, 2004

REFERENCE:
MCA019  ARTIFICIAL INTELLIGENCE

UNIT I  INTRODUCTION  

UNIT II  SEARCHING TECHNIQUES  

UNIT III  KNOWLEDGE REPRESENTATION  

UNIT IV  LEARNING  

UNIT V  APPLICATIONS  

TEXT BOOK:

REFERENCES:
MCA020  PARALLEL AND DISTRIBUTED COMPUTING  

UNIT I  INTRODUCTION TO DISTRIBUTED ENVIRONMENT  

UNIT II  INTRODUCTION TO PARALLEL COMPUTERS AND COMPUTATION  
Introduction to Parallelism and computing - Parallel machine model - Parallel programming model - HPC/HTC models.

UNIT III  DESIGNING PARALLEL ALGORITHMS  
Methodical design – Partitioning – Communication - Agglomeration; Mapping - Design and development of parallel processing system - Unix Workstation clusters - Master slave programming - Multi-threaded programming – Scheduling - Concurrency

UNIT IV  FAULT TOLERANCE AND DISTRIBUTED FILE SYSTEMS  

UNIT V  CASE STUDIES  

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA021  SOFT COMPUTING  

UNIT I  INTRODUCTION TO SOFT COMPUTING AND NEURAL NETWORKS  
Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics  

UNIT II  GENETIC ALGORITHMS  
Introduction to Genetic Algorithms (GA) – Applications of GA in Machine Learning - Machine Learning Approach to Knowledge Acquisition.  

UNIT III  NEURAL NETWORKS  

UNIT IV  FUZZY LOGIC  

UNIT V  NEURO-FUZZY MODELING  

TOTAL= 45  

TEXT BOOKS:  

REFERENCES:  
MCA022 SOFTWARE PROJECT MANAGEMENT

UNIT I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT
Project Definition – Contract Management – Activities Covered By Software Project Management – Overview of Project Planning – Stepwise Project Planning.

UNIT II PROJECT EVALUATION

UNIT III ACTIVITY PLANNING

UNIT IV MONITORING AND CONTROL

UNIT V MANAGING PEOPLE AND ORGANIZING TEAMS

TOTAL = 45

TEXT BOOK:

REFERENCES:
MCA023 PROFESSIONAL ETHICS

UNIT I ENGINEERING ETHICS

UNIT II ENGINEERING AS SOCIAL EXPERIMENTATION

UNIT III ENGINEER’S RESPONSIBILITY FOR SAFETY

UNIT IV RESPONSIBILITIES AND RIGHTS

UNIT V GLOBAL ISSUES

TOTAL = 45

TEXT BOOKS:

REFERENCES: