PROGRAMME EDUCATIONAL OBJECTIVES

I. To excel in problem solving and programming skills in the various computing fields of IT industries
II. To develop the ability to plan, analyze, design, code, test, implement & maintain a software product for real time system
III. To promote students capability to set up their own enterprise in various sectors of Computer applications
IV. To experience the students in finding solutions and developing system based applications for real time problems in various domains involving technical, managerial, economical & social constraints
V. To prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and research.

PROGRAMME OBJECTIVES

a) Understand and Apply mathematical foundation, computing and domain knowledge for the conceptualization of computing model of problems.

b) Identify, Analyze the computing requirements of a problem and Solve them using computing principles.

c) Design and Evaluate a computer based system, components and process to meet the specific needs of applications.

d) Use current techniques and tools necessary for complex computing practices.

e) Use suitable architecture or platform on design and implementation with respect to performance

f) Develop and integrate effectively system based components into user environment.

g) Understand and commit to Cyber regulations and responsibilities in Professional computing practices.

h) Recognize the need for and develop the ability to engage in continuous learning as a Computing professional.

i) Apply the understanding of management principles with computing knowledge to manage the projects in multidisciplinary environments.

j) Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations.

k) Understand societal, environmental, health, legal, ethical issues within local and global contexts and the consequential responsibilities relevant to professional practice.

l) Function effectively in a team environment to accomplish a common goal.

m) Identify opportunities and use innovative ideas to create value and wealth for the betterment of the individual and society.

n) Use knowledge to analyze, interpret the data and synthesis the information to derive valid conclusions using research methods.

o) Expertise in developing application with required domain knowledge.
ANNA UNIVERSITY, CHENNAI  
AFFILIATED INSTITUTIONS  
REGULATIONS - 2013  
CURRICULUM I TO VI SEMESTERS (FULL TIME)  
MASTER OF COMPUTER APPLICATION

**SEMIESTER 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>MA7151</td>
<td>Mathematical Foundation for Computer Applications</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>MC7101</td>
<td>Computer Organization</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MC7102</td>
<td>Problem Solving and Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MC7103</td>
<td>Database Management Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MC7104</td>
<td>Data Structures and Algorithms</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>MC7111</td>
<td>DBMS Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MC7112</td>
<td>Data Structures and Algorithms Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MC7113</td>
<td>Communication Skill Laboratory</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>16</td>
<td>2</td>
<td>8</td>
<td>23</td>
</tr>
</tbody>
</table>

**SEMIESTER 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>MC7201</td>
<td>Object Oriented Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MC7202</td>
<td>Web Programming Essentials</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MC7203</td>
<td>System Software</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MC7204</td>
<td>Operating Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MC7205</td>
<td>Computer Graphics and Multimedia</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>MC7211</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>MC7212</td>
<td>Web Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MC7213</td>
<td>Graphics and Multimedia 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>0</td>
<td>9</td>
<td>21</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></td>
<td></td>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MC7301</td>
<td>Computer Networks</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MC7302</td>
<td>Embedded Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MC7303</td>
<td>Software Engineering</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MC7304</td>
<td>Professional Ethics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>MC7305</td>
<td>Internet Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PRACTICAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MC7311</td>
<td>Embedded Systems Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MC7312</td>
<td>Internet Programming</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MC7313</td>
<td>Visual Programming Laboratory</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td>16</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></td>
<td></td>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MC7401</td>
<td>Resource Management Techniques</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MC7402</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>MC7403</td>
<td>Data Warehousing and Data Mining</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>MC7404</td>
<td>Network Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Elective I</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PRACTICAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MC7411</td>
<td>Software Development- Case Tools Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MC7412</td>
<td>Network Programming</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MC7413</td>
<td>Technical Seminar and Report Writing</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></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></td>
<td></td>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>MC7501</td>
<td>Web Application Development</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>MC7502</td>
<td>Service Oriented Architecture</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>MC7503</td>
<td>Mobile computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>Elective II</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Elective III</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PRACTICAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>MC7511</td>
<td>Advanced Internet Programming Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>MC7512</td>
<td>XML and Web Services Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>MC7513</td>
<td>Mini Project(Socially Relevant)</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></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>1.</td>
<td>MC7611</td>
<td>Project Work</td>
<td>0</td>
<td>0</td>
<td>24</td>
<td>12</td>
</tr>
</tbody>
</table>

**TOTAL NO OF CREDITS: 119**

### LIST OF ELECTIVES

<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></td>
<td><strong>ELECTIVE I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MC7001</td>
<td>Game Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7002</td>
<td>Soft Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7003</td>
<td>Accounting and Financial Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7004</td>
<td>Energy Aware Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7005</td>
<td>Security in computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MA7071</td>
<td>Numerical and Statistical Methods</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ELECTIVE II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MC7006</td>
<td>M-commerce</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7007</td>
<td>Health Care Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7008</td>
<td>Geological Information Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7009</td>
<td>Human Resource Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7010</td>
<td>Enterprise Application Integration</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7011</td>
<td>Big Data Analytics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ELECTIVE III</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MC7012</td>
<td>Ad hoc and Sensor Networks</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7013</td>
<td>Semantic Web</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7014</td>
<td>Software Testing and Quality Assurance</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7015</td>
<td>Software Project Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7016</td>
<td>Cloud Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MC7017</td>
<td>Network Protocols</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
COURSE OBJECTIVES:
• To understand the concepts and operations of matrix algebra needed for computing graphics modeling
• To understand and apply the class of functions which transform a finite set into another finite set which relates to input output functions in computer science.
• To impart discrete knowledge in computer engineering through finite automata and Context free grammars

UNIT I MATRIX ALGEBRA 9
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 9
Basic Definitions - Venn Diagrams and set operations - Laws of set theory - Principle of inclusion and exclusion - partitions- Permutation and Combination - Relations- Properties of relations - Matrices of relations - Closure operations on relations - Functions - injective, subjective and objective functions.

UNIT III MATHEMATICAL LOGIC 9
Propositions and logical operators - Truth table - Propositions generated by a set, Equivalence and implication - Basic laws- Some more connectives - Functionally complete set of connectives- Normal forms - Proofs in Propositional calculus - Predicate calculus.

UNIT IV FORMAL LANGUAGES 9
Languages and Grammars-Phrase Structure Grammar-Classification of Grammars-Pumping Lemma For Regular Languages-Context Free Languages.

UNIT V FINITE STATE AUTOMATA 9
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

TOTAL: 45+15= 60 PERIODS

COURSE OUTCOMES:
• Acquire the basic knowledge of matrix, set theory, functions and relations concepts needed for designing and solving problems
• Acquire the knowledge of logical operations and predicate calculus needed for computing skill
• Able to design and solve Boolean functions for defined problems
• Apply the acquired knowledge of formal languages to the engineering areas like Compiler Design
• Apply the acquired knowledge of finite automata theory and design discrete problems to solve by computers.

REFERENCES:
MC7101  COMPUTER ORGANIZATION  L T P C
                                    3 0 0 3

COURSE OBJECTIVES:
- To impart the knowledge in the field of digital electronics
- To impart knowledge about the various components of a computer and its internals.
- To design and realize the functionality of the computer hardware with basic gates and other components using combinational and sequential logic.
- To understand the importance of the hardware-software interface

UNIT I  DIGITAL FUNDAMENTALS  8
Number Systems and Conversions – Boolean Algebra and Simplification – Minimization of Boolean Functions – Karnaugh Map, Logic Gates – NAND – NOR Implementation

UNIT II  COMBINATIONAL AND SEQUENTIAL CIRCUITS  10

UNIT III  BASIC STRUCTURE OF COMPUTERS & PARALLEL PROCESSING  9
Functional units – Basic operational concepts – Bus structures – Performance and Metrics – Instruction and instruction sequencing – Addressing modes – ALU design – Fixed point and Floating point operation.

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, I/O SYSTEM AND PARALLEL PROCESSING  9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Able to design digital circuits by simplifying the Boolean functions
- Able to understand the organization and working principle of computer hardware components
- Able to understand mapping between virtual and physical memory
- Acquire knowledge about multiprocessor organization and parallel processing
- Able to trace the execution sequence of an instruction through the processor

REFERENCES:
MC7102 PROBLEM SOLVING AND PROGRAMMING L T P C 3 0 0 3

COURSE OBJECTIVES:
- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

UNIT I INTRODUCTION TO COMPUTER PROBLEM SOLVING 8

UNIT II PROGRAMMING, ALGORITHMS AND FLOWCHARTS 9

UNIT III BASICS OF ‘C’, INPUT / OUTPUT & CONTROL STATEMENTS 9

UNIT IV ARRAYS, STRINGS, FUNCTIONS AND POINTERS 10

UNIT V USER-DEFINED DATATYPES & FILES 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Able to design a computational solution for a given problem.
- Able to break a problem into logical modules that can be solved (programmed).
- Able to transform a problem solution into programs involving programming constructs
- To write programs using structures, strings, arrays, pointers and files for solving complex computational problem.
- Able to introduce modularity using functions and pointers which permit ad hoc run-time polymorphism.
REFERENCES:

MC7103 DATABASE MANAGEMENT SYSTEMS L T P C 3 0 0 3

COURSE OBJECTIVES
• To understand the fundamentals of data models and conceptualize and depict a database system using ER diagram
• To make a study of SQL and relational database design.
• To know about data storage techniques an query processing.
• To impart knowledge in transaction processing, concurrency control techniques and recovery procedures.

UNIT I INTRODUCTION 9

UNIT II RELATIONAL MODEL AND QUERY EVALUATION 9

UNIT III TRANSACTION PROCESSING 9

UNIT IV FILES AND INDEXING 9

UNIT V SPECIAL PURPOSE DATABASES 9
OODBMS- - Object-Based Databases - OO Data Model - OO Languages – Persistence – Object Relational Databases - XML – Structure of XML - Temporal Databases – Mobile Databases – Spatial Databases – Case Study for Design and Manage the Database for any Project

TOTAL : 45 PERIODS
COURSE OUTCOMES:
- Understand the basic concepts of the database and data models.
- design a database using ER diagrams and map ER into Relations and normalize the relations
- Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
- Develop a simple database applications using normalization.
- Acquire the knowledge about different special purpose databases and to critique how they differ from traditional database systems.

REFERENCES:

MC7104 DATA STRUCTURES AND ALGORITHMS L T P C
3 1 0 4

COURSE OBJECTIVES
- To understand the linear and non linear data structures available in solving problems
- To know about the sorting and searching techniques and its efficiencies
- To get a clear idea about the various algorithm design techniques
- Using the data structures and algorithms in real time applications
- Able to analyze the efficiency of algorithm

UNIT I LINEAR DATA STRUCTURES 9+3

UNIT II TREE STRUCTURES 9+3

UNIT III BALANCED SEARCH TREES, SORTING AND INDEXING 9+3
UNIT IV  GRAPHS

UNIT V  ALGORITHM DESIGN AND ANALYSIS

TOTAL 45+15: 60 PERIODS

COURSE OUTCOMES:
• Able to select and apply the data structure to suit any given problem.
• Able to design their own data structure according to the application need.
• Able to apply the algorithm design techniques to any of the real world problem.
• Able to develop any new application with the help of data structures and algorithms.
• Able to write efficient algorithm for a given problem and able to analyze its time complexity.

REFERENCES:

MC7111  DBMS LABORATORY  L T P C
0 0 3 2

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 – Packages
5. Use of Cursors, Procedures and Functions
6. Embedded SQL or Database Connectivity.
7. Oracle or SQL Server Triggers – Block Level – Form Level Triggers
8. Working with Forms, Menus and Report Writers for a application project in any domain

TOTAL: 45 PERIODS
MC7112  DATA STRUCTURES AND ALGORITHMS  LABORATORY  L T P C  0 0 3 2

1. Polynomial Addition using array
2. Array implementation of stack
3. Array implementation of Queue
4. Infix to postfix conversion
5. Singly Linked List operations
6. Binary tree traversals
7. Quick sort
8. Dictionary application using any of the data structure
9. Find the Shortest Path using Dijkstra’s Algorithm – Greedy method
10. Warshall’s Algorithm for finding transitive closure using Dynamic programming
11. Sum of subset problem using backtracking

TOTAL: 45 PERIODS

MC7113  COMMUNICATION SKILL LABORATORY  L T P C  1 0 2 2

I. PC based session (Weightage 40%) 21 periods

A. English Language Lab (15 Periods)

1. **Listening Comprehension:**
   Listening and typing – Listening and sequencing of sentences – Filling in the blanks - Listening and answering questions.

2. **Reading Comprehension:**
   Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.

3. **Speaking:**
   Phonetics: Intonation – Ear training - Correct Pronunciation – Sound recognition exercises – Common Errors in English. Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

B. Discussion of audio-visual materials (6 periods) (Samples to learn and practice)

1. **Resume / Report Preparation / Letter Writing**
   Structuring the resume / report - Letter writing / Email Communication - Samples.

2. **Presentation skills:**
   Elements of effective presentation – Structure of presentation - Presentation tools – Voice Modulation – Audience analysis - Body language – Video samples

3. **Soft Skills:**
   Time management – Articulateness – Assertiveness – Psychometrics – Innovation and Creativity - Stress Management & Poise - Video Samples

4. **Group Discussion:**
   Why is GD part of selection process ? - Structure of GD – Moderator – led and other GDs - Strategies in GD – Team work - Body Language - Mock GD –Video samples

8
5. **Interview Skills:**
   Kinds of interviews – Required Key Skills – Corporate culture – Mock interviews- Video samples.

II. **Practice Session (Weightage – 60%) 24 periods**

1. **Resume / Report Preparation / Letter writing:** Students prepare their own resume and report.

2. **Presentation Skills:** Students make presentations on given topics.

3. **Group Discussion:** Students participate in group discussions.

4. **Interview Skills:** Students participate in Mock Interviews

**REFERENCES:**

**LAB REQUIREMENTS:**
1. Teacher console and systems for students.
2. English Language Lab Software
3. Career Lab Software

**Guidelines for the course**
1. A batch of 60 students is divided into two groups – one group for the PC- based session and the other group for the Class room session.
2. The English Lab (2 Periods) and the Career Lab (2 Periods) may be handled by any competent teacher
3. **Record Notebook:** At the end of each session of English Lab, review exercises are given for the students to answer and the computer evaluated sheets are to be compiled as record notebook. Similar exercises for the career lab are to be compiled in the record notebook.
4. **Internal Assessment:** The 15 marks (the other 5 marks for attendance) allotted for the internal assessment will be based on the record notebook compiled by the candidate. 10 marks may be allotted for English Lab component and 5 marks for the Career Lab component.
5. **End semester Examination:** The end-semester examination carries 40% weightage for English Lab and 60% weightage for Career Lab.

**TOTAL : 45 PERIODS**
MC7201 OBJECT ORIENTED PROGRAMMING L T P C 3 0 0 3

COURSE OBJECTIVES:
- To learn how C++ supports Object Oriented principles such as abstraction, polymorphism etc
- To understand and apply the principles hiding, localization and modularity in software development.
- Use the generic programming features of C++ including the STL
- Design and implement reliable and maintainable object-oriented applications of moderate complexity composed of several classes

UNIT I  FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING 9

UNIT II  IMPLEMENTING ADTS AND ENCAPSULATION 9
Aggregate Type struct – Structure Pointer Operators – Unions – Bit Fields – Data Handling and Member Functions – Classes – Constructors and Destructors – Static Member – this Pointer – reference semantics – implementation of simple ADTs.

UNIT III  POLYMORPHISM 9

UNIT IV  TEMPlATES AND FILE HANDLING 9

UNIT V  INHERITANCE 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Able to understand and design the solution to a problem using object-oriented programming concepts.
- Able to use proper class protection mechanism to provide security.
- Able to demonstrate the use of virtual functions to implement polymorphism.
- Understand and implement the features of C++ including templates, exceptions and file handling for providing programmed solutions to complex problems
- Able to reuse the code with extensible Class types, User-defined operators and function overloading
REFERENCES:

MC7202 WEB PROGRAMMING ESSENTIALS L T P C
3 0 0 3

COURSE OBJECTIVES:
- To understand the concepts and architecture of the World Wide Web.
- To understand and practice mark up languages
- To understand and practice embedded dynamic scripting on client side Internet Programming
- To understand and practice web development techniques on client-side

UNIT I INTRODUCTION TO WWW

UNIT II UI DESIGN


UNIT III INTRODUCTION TO JAVASCRIPT
Introduction - Core features - Data types and Variables - Operators, Expressions, and Statements - Functions - Objects - Array, Date and Math related Objects - Document Object Model - Event Handling - Controlling Windows & Frames and Documents - Form handling and validations.

UNIT IV ADVANCED JAVASCRIPT
Browser Management and Media Management – Classes – Constructors – Object-Oriented Techniques in JavaScript – Object constructor and Prototyping - Sub classes and Super classes – JSON - jQuery and AJAX.

UNIT V PHP
Introduction - How web works - Setting up the environment (LAMP server) - Programming basics - Print/echo - Variables and constants – Strings and Arrays – Operators, Control structures and looping structures – Functions – Reading Data in Web Pages - Embedding PHP within HTML - Establishing connectivity with MySQL database.
COURSE OUTCOMES:

- Acquire knowledge about functionalities of world wide web
- Explore markup languages features and create interactive web pages using them
- Learn and design Client side validation using scripting languages
- Acquire knowledge about Open source JavaScript libraries
- Able to design front end web page and connect to the back end databases.

REFERENCE BOOKS:

MC7203 SYSTEM SOFTWARE

<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>

COURSE OBJECTIVES:
- To understand the relationship between system software and machine architecture, design and implementation of assemblers, linkers and loaders.
- To understand the design, function and implementation of assemblers, linkers and loaders
- To have an understanding of macro processors and system software tools

UNIT I  BASICS OF SYSTEM SOFTWARE AND ASSEMBLER


UNIT II  COMPILER- LEXICAL ANALYSIS, SYNTAX ANALYSIS

Phases of compiler-Lexical Analysis: Role of a Lexical analyzer, input buffering, specification and recognition of tokens, Finite Automata, Designing a lexical analyzer generator, Pattern matching based on NFA’s. Syntax Analysis: Role of Parser, Top-down parsing, recursive descent and predictive parsers (LL), Bottom-Up parsing, Operator precedence parsing, LR, SLR and LALR parsers.

UNIT III  COMPILER- CODE GENERATION, OPTIMIZATION

Intermediate languages: graphical representations, DAGs, Three address code, types of three address statements, syntax directed translation into three address code, implementation of three address statements-Code Optimization: Machine dependent and machine independent code generation: Sources of optimization-Code Generation-Semantic stacks, evaluation of expressions, control structures, and procedure calls.
UNIT IV LOADERS AND LINKERS


UNIT V MACRO PROCESSORS & OTHER SYSTEM SOFTWARE


TOTAL: 45 PERIODS .

COURSE OUTCOMES:
- Able to trace the path of a source code to object code and the to executable file
- To design the front end of the compiler-scanner, parser
- Understand and identify the relationship between system software and machine architecture
- Analyze the functions of assembler, compiler, linker, and loaders
- Know the design and implementation of loaders and linkers

REFERENCES:

MC7204 OPERATING SYSTEMS

COURSE OBJECTIVES:
- To be aware of the evolution and fundamental principles of operating system, processes and their communication
- To understand the various operating system components like process management, memory management and
- To know about file management and the distributed file system concepts in operating systems
- To be aware of components of operating system with relevant case study

UNIT I INTRODUCTION

Introduction -Types of operating systems-operating systems structures-Systems components-operating systems services-System calls-Systems programs-Processes-process concept-process scheduling-operation on processes-co-operating processes-Inter process communications-CPU Scheduling-Scheduling criteria-Scheduling algorithms-Multiple-processor Scheduling
UNIT II PROCESS SYNCHRONIZATION

UNIT III MEMORY MANAGEMENT
Memory Management-Swapping-Contiguous Memory allocation-Paging-Segmentation-Virtual Memory-Demand paging-Page Replacement-Thrashing

UNIT IV DISK SCHEDULING AND DISTRIBUTED SYSTEMS

UNIT V CASE STUDIES

COURSE OUTCOMES:
- Able to understand the operating system components and its services
- Implement the algorithms in process management and solving the issues of IPC
- Able to demonstrate the mapping between the physical memory and virtual memory
- Able to understand file handling concepts in OS perspective
- Able to understand the operating system components and services with the recent OS

TOTAL : 45 PERIODS

REFERENCES:

MC7205 COMPUTER GRAPHICS AND MULTIMEDIA L T P C 3 0 0 3

COURSE OBJECTIVES:
- To understand computational development of graphics with mathematics
- To provide in-depth knowledge of display systems, image synthesis, shape modeling of 3D application.
- To Understand basic concepts related to Multimedia including data standards, algorithms and software
- To Experience development of multimedia software by utilizing existing libraries and descriptions of algorithms
UNIT I BASIC CONCEPTS

UNIT II 3D GRAPHICS

UNIT III MULTIMEDIA BASICS

UNIT IV MULTIMEDIA COMMUNICATION

UNIT V MULTIMEDIA APPLICATION DEVELOPMENT

TOTAL: 45 PERIODS

COURSE OUTCOMES:
• Gain proficiency in 3D computer graphics API programming
• Enhance the perspective of modern computer system with modeling, analysis and interpretation of 2D and 3D visual information.
• Able to understand different realizations of multimedia tools
• Able to develop interactive animations using multimedia tools
• Gain the knowledge of different media streams in multimedia transmission

REFERENCES:
7. Mohammad Dastbaz, Designing Interactive Multimedia Systems
8. Multimedia – Technology and applications David Hillman Galgotia Publications, Delhi
MC7211  OBJECT ORIENTED PROGRAMMING LABORATORY

1. Write a C++ Program to illustrate Enumeration and Function Overloading
2. Write a C++ Program to illustrate Scope and Storage class
3. Implementation of ADT such as Stack and Queues
4. Write a C++ Program to illustrate the use of Constructors and Destructors and Constructor Overloading
5. Write a Program to illustrate Static member and methods
6. Write a Program to illustrate Bit fields
7. Write a Program to overload as binary operator, friend and member function
8. Write a Program to overload unary operator in Postfix and Prefix form as member and friend function
9. Write a Program to illustrate Iterators and Containers
10. Write a C++ Program to illustrate function templates
11. Write a C++ Program to illustrate template class
12. Write C++ Programs and incorporating various forms of Inheritance
13. Write a C++ Program to illustrate Virtual functions
14. Exception Handling
15. File Handling – Read, Write, Update

TOTAL: 45 PERIODS

MC7212  WEB PROGRAMMING LABORATORY

1. Create a web page with the following using HTML5
   (i) To embed an image map in a web page
   (ii) To fix the hot spots
   (iii) Show all the related information when the hot spots are clicked.
2. Create a web page with all types of Cascading style sheets.
3. Implement Client Side Scripts for Validating Web Form Controls using JavaScript.
4. Designing Quiz Application Personal Information System/ Using JavaScript
5. Write a JavaScript for Loan Calculation.
6. Develop and demonstrate a HTML file that includes JavaScript that uses functions for the following problems:
   a) Parameter: A string
      Output: The position in the string of the left-most vowel
   b) Parameter: A number
      Output: The number with its digits in the reverse order
7. Develop PHP program using Arrays, control structures, looping structures and Form Handling
8. Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.
9. Write an AJAX program for parsing a JSON file and formatting the output.
10. Develop a web application for Airline Reservation System using PHP & AJAX.

TOTAL: 45 PERIODS
MC7213  GRAPHICS AND MULTIMEDIA LAB  L T P C
0 0 3 2

UNIT I  TWO DIMENSIONAL TRANSFORMATIONS  9
Creation of two dimensional objects and applying simple transformations like Translation, Scaling, Rotation and applying Composite transformations.

UNIT II  CLIPPING AND WINDOWING  9
Clipping and windowing of a part of the created two dimensional object using any one of the clipping algorithm.

UNIT III  THREE DIMENSIONAL TRANSFORMATIONS  9
Creation of simple three dimensional objects like cube, cone and cylinder and applying simple transformations like Translation, Scaling, Rotation, Composite transformations, projections – Parallel, Perspective.

UNIT IV  VISIBLE SURFACE DETECTION  9
Finding out visible surfaces and removal of hidden surfaces in simple objects using object space and image space algorithms.

UNIT V  IMAGE EDITING  9
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 modes. Creation of simple Gif animated images with textual illustrations, Image Compression.

Software:
1. C/C++/Java
2. OpenGL 3.7 (precompiled GLUT libraries 3.7 – Open source)
3. Any open source software like ‘GIMP 2.6’/ Flash 8.0 /Photoshop

TOTAL: 45 PERIODS

MC7301  COMPUTER NETWORKS  L T P C
3 0 0 3

COURSE OBJECTIVES:
• To understand networking concepts and basic communication model
• To understand network architectures and components required for data communication.
• To analyze the function and design strategy of physical, data link, network layer and transport layer
• To Acquire knowledge of various application protocol standard developed for internet

UNIT I  NETWORK FUNDAMENTALS  9

UNIT II  DATA LINK LAYER  9
UNIT III  NETWORK LAYER

UNIT IV  TRANSPORT LAYER

UNIT V  APPLICATIONS
Applications - DNS- SMTP – WWW –SNMP- Security –threats and services - DES- RSA- web security -SSL

COURSE OUTCOMES:
• Able to trace the flow of information from one node to another node in the network
• Able to identify the components required to build different types of networks
• Able to understand the functionalities needed for data communication into layers
• Able to choose the required functionality at each layer for given application
• Able to understand the working principles of various application protocols
• Acquire knowledge about security issues and services available

REFERENCES:
8. Wayne Tomasi, “Introduction to Data communications and Networking”, Pearson 2011

MC7302      EMBEDDED SYSTEMS

COURSE OBJECTIVES:
• To understand the architecture and functions of 8085 processor
• To Learn Assembly language programming
• To understand the Basic concepts of Embedded systems and 8051 microcontroller
• To gain knowledge about how the I/O devices are interfaced with 8051 microcontroller
• To understand the basics of RTOS and to learn the method of designing a real time systems

UNIT I  INTRODUCTION TO MICROPROCESSORS
UNIT II INTRODUCTION TO EMBEDDED SYSTEMS
Embedded Systems- Processor Embedded Into A System-Embedded Hardware And Software Units-
Applications-Design Process – Intel 8051 Architecture- Processor And Memory Organization-
Interrupts Of 8051 - Assembly Language Programming Using 8051

UNIT III INTERFACING WITH 8051
Serial And Parallel Communication – Motor Control-Programming Display Devices – ARM Architecture

UNIT IV REAL – TIME OPERATING SYSTEM
Inter Process Communication – Signal Functions – Socket Programming – Mailbox - Pipes – RTOS –
OS Services – Process Management - Timer Function –Event Function – Memory Management –
Device, Files And I/O Subsystem – Basic Design Of RTOS.

UNIT V RTOS PROGRAMMING
Basic Functions – Types Of RTOS – RTOS μCOS – RTLinux – Real Time Linux Functions-
Programming With RTLinux – Case Study

TOTAL : 45 PERIODS

COURSE OUTCOMES:
• Able to understand the functionality of 805 microprocessor
• Able to design and control real time control systems
• Able incorporate enhanced features in the embedded systems through software
• Able to rectify minor problems by troubleshooting
• Acquire the knowledge of real time operating system and implement real time functions

REFERENCE BOOKS:
5. Mohamed Rafiquzzaman, “Microprocessors and Micro computer-based system design”, CRC

MC7303 SOFTWARE ENGINEERING L T P C
3 0 0 3

COURSE OBJECTIVES:
• to provide an insight into the processes of software development
• To understand and practice the various fields such as analysis, design, development, testing of
Software Engg.
• To develop skills to construct software of high quality with high reliability
• To apply metrics and testing techniques to evaluate the software

UNIT I INTRODUCTION
Software Engineering paradigms – Waterfall Life cycle model – Spiral Model – Prototype Model –
fourth Generation Techniques – Planning – Software Project Scheduling, – Risk analysis and
management – Requirements and Specification – Case Study for Project Plan and SRS
UNIT II SOFTWARE DESIGN

UNIT III SOFTWARE TESTING AND MAINTENANCE

UNIT IV SOFTWARE METRICS

UNIT V SCM & WEB ENGINEERING

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Get an insight into the processes of software development
- Able to understand the problem domain for developing SRS and various models of software engineering
- Able to Model software projects into high level design using DFD,UML diagrams
- Able to Measure the product and process performance using various metrics
- Able to Evaluate the system with various testing techniques and strategies

REFERENCE BOOKS:
MC7304 PROFESSIONAL ETHICS

UNIT I COMPUTER ETHICS INTRODUCTION AND COMPUTER HACKING  

UNIT II ASPECTS OF COMPUTER CRIME AND INTELLECTUAL PROPERTY RIGHTS  

UNIT III REGULATING INTERNET CONTENT, TECHNOLOGY AND SAFETY  

UNIT IV COMPUTER TECHNOLOGIES ACCESSIBILITY ISSUES  

UNIT V SOFTWARE DEVELOPMENT AND SOCIAL NETWORKING  

TOTAL: 45 PERIODS

COURSE OUTCOMES:
• Helps to examine situations and to internalize the need for applying ethical principles, values to tackle with various situations.
• Develop a responsible attitude towards the use of computer as well as the technology.
• Able to envision the societal impact on the products/ projects they develop in their career
• Understanding the code of ethics and standards of computer professionals.
• Analyze the professional responsibility and empowering access to information in the work place.
REFERENCES:

MC 7305  INTERNET PROGRAMMING                      L T P C
                    3 0 0 3

COURSE OBJECTIVES:
• To provide an overview of working principles of internet, web related functionalities
• To understand and apply the fundamentals core java, packages, database connectivity for computing
• To enhance the knowledge to server side programming
• To provide knowledge on advanced features like Swing, JavaBeans, Sockets.

UNIT I  INTERNET APPLICATIONS 9
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 – Voice and Video Conferencing – Web Security, Privacy, and site-blocking – FTP.

UNIT II  JAVA FUNDAMENTAL 9

UNIT III  PACKAGES 9

UNIT IV  ADVANCED JAVA PROGRAMMING 9

UNIT V  JAVA BEANS AND NETWORKING 9

TOTAL: 45 PERIODS
COURSE OUTCOMES:
- Able to understand the internet standards and recent web technologies like Conferencing, newsgroup etc.
- Able to implement, compile, test and run Java program,
- Able to make use of hierarchy of Java classes to provide a solution to a given set of requirements found in the Java API
- Able to understand the components and patterns that constitute a suitable architecture for a web application using java servlets
- Able to demonstrate systematic knowledge of backend and front end by developing an appropriate application.

REFERENCES:

MC7311 EMBEDDED SYSTEMS LABORATORY

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

1. Assembly Language Programs Using 8085 – 3 Experiments
2. 8051 Microcontroller Based Simple ALP Experiments – 2 Experiments
3. 8051 Microcontroller Based I/O Interfacing - 2 Experiments
4. Real Time Systems Program Using RTOS – 2 Experiments
5. Case Study Using RTLinux

TOTAL : 45 PERIODS
MC7312  INTERNET PROGRAMMING LABORATORY  L T P C
0 0 3 2

1. Basics - Sending and receiving mails from one or more email clients, Video Conferencing demonstration.
2. Writing Java programs by making use of class, interface, package, etc for the following
   # Different types of inheritance study
   # Uses of ‘this’ keyword
   # Polymorphism
   # Creation of user specific packages
   # Creation of jar files and using them
   # User specific exception handling
3. Writing window based GUI applications using frames and applets such as Calculator application, Fahrenheit to Centigrade conversion etc
4. Application of threads examples
5. Reading and writing text files
6. Writing an RMI application to access a remote method
7. Writing a Servlet program with database connectivity for a web based application such as students result status checking, PNR number enquiry etc
8. Creation and usage of Java bean
9. Create a Personal Information System using Swing
10. Event Handling in Swing
11. FTP Using Sockets.

TOTAL : 45 PERIODS

MC7313  VISUAL PROGRAMMING LABORATORY  L T P C
1 0 3 2

VB
1. Database applications using data control.

VC++
1. SDK type programs code for GDI objects.
2. Implementation of Process management using PWCT
3. Implementation of advanced dynamic Slider & Image control applications
4. Programming for reading and writing into documents.
5. Creating DLLs and using them.
6. Data access through ODBC – Cdatabase, Crecordset.
7. Creating status bar application, static and dynamic splitter windows
8. create an application that will load the bit map dynamically with and with out wizard
9. Creating Active-x controls using .Net

TOTAL : 45 PERIODS

24
MC7401 RESOURCES MANAGEMENT TECHNIQUES

L T P C
3 0 0 3

COURSE OBJECTIVES:

- To provide the concept and an understanding of basic concepts in Operations Research Techniques for Analysis and Modeling in Computer Applications.
- To understand, develop and solve mathematical model of linear programming problems
- To understand, develop and solve mathematical model of Transport and assignment problems
- To understand network modeling for planning and scheduling the project activities

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 / ∞ / ∞), (M / M / C) : (FIFO / N / ∞) models.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

- Understand and apply linear, integer programming to solve operational problem with constraints
- Apply transportation and assignment models to find optimal solution in warehousing and travelling
- To prepare project scheduling using PERT and CPM
- Identify and analyze appropriate queuing model to reduce the waiting time in queue.
- Able to use optimization concepts in real world problems

REFERENCES:
MC7402 OBJECT ORIENTED ANALYSIS AND DESIGN L T P C 3 0 0 3

COURSE OBJECTIVES:
- To provide a brief, hands-on overview of object-oriented analysis in software process
- To discuss Case studies based project specifications to develop object-oriented models and identify implementation strategies.
- To demonstrate and apply basic object oriented techniques to create and modify object oriented analysis and design models.
- To understand and apply testing techniques for object oriented software

UNIT I INTRODUCTION 9

UNIT II METHODOLOGY AND UML 9

UNIT III OBJECT ORIENTED ANALYSIS 9
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 9

UNIT V QUALITY AND TESTING 9

TOTAL : 45 PERIODS

COURSE OUTCOMES:
- Understand the basic concepts to identify state & behavior of real world objects
- Able to learn the various object oriented methodologies and choose the appropriate one for solving the problem with the help of various case studies
- Understand the concept of analysis, design & testing to develop a document for the project
- Able to implement analysis, design & testing phases in developing a software project
- Able to understand the testing strategies and know about automated testing tools
REFERENCES:
5. Bernd Bruegge, Allen H. Dutoit, Object Oriented Software Engineering using UML, Patterns and Java, Pearson 2004

MC7403 DATA WAREHOUSING AND DATA MINING L T P C
3 0 0 3

COURSE OBJECTIVES:
- To expose the students to the concepts of Data warehousing Architecture and Implementation
- To Understand Data mining principles and techniques and Introduce DM as a cutting edge business intelligence
- To learn to use association rule mining for handling large data
- To understand the concept of classification for the retrieval purposes
- To know the clustering techniques in details for better organization and retrieval of data
- To identify Business applications and Trends of Data mining

UNIT I DATA WAREHOUSE

UNIT II DATA MINING & DATA PREPROCESSING
Introduction to KDD process – Knowledge Discovery from Databases - Need for Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

UNIT III ASSOCIATION RULE MINING
Introduction - Data Mining Functionalities - Association Rule Mining - Mining Frequent Itemsets with and without Candidate Generation - Mining Various Kinds of Association Rules - Constraint-Based Association Mining.

UNIT IV CLASSIFICATION & PREDICTION
UNIT V  CLUSTERING

COURSE OUTCOMES:
Upon Completion of the course, the students will be able to
- Store voluminous data for online processing
- Preprocess the data for mining applications
- Apply the association rules for mining the data
- Design and deploy appropriate classification techniques
- Cluster the high dimensional data for better organization of the data
- Discover the knowledge imbibed in the high dimensional system
- Evolve Multidimensional Intelligent model from typical system
- Evaluate various mining techniques on complex data objects

REFERENCES:
4. BERSON, ALEX & SMITH, STEPHEN J, Data Warehousing, Data Mining, and OLAP, TMH Pub. Co. Ltd, New Delhi, 2012
6. PRABHU Data Warehousing, PHI Learning Private Limited, New Delhi, 2012,
7. PONNIAH, PAULRAJ, Data Warehousing Fundamentals, John Wiley & Sons, New Delhi, 2011
8. MARAKAS, GEORGE M, Modern Data Warehousing, Mining, and Visualiza Visualization, Pearson Education, 2011

MC7404  NETWORK PROGRAMMING  L T P C  3 0 0 3

COURSE OBJECTIVES:
1. To understand interprocess and inter-system communication
2. To understand socket programming in its entirety
3. To understand usage of TCP/UDP / Raw sockets
4. To understand how to build network applications

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 PERIODS

COURSE OUTCOMES:
1. To write socket API based programs
2. To design and implement client-server applications using TCP and UDP sockets
3. To analyze network programs

REFERENCES:

MC7411  SOFTWARE DEVELOPMENT – CASE TOOLS LABORATORY
1. Practicing the different types of case tools such as Rational Rose / other Open Source be used for all the phases of Software development life cycle.
2. Data modeling
3. Source code generators
4. Apply the following to typical application problems:
   1. Project Planning
   2. Software Requirement Analysis
   3. Software Design
   4. Data Modeling & Implementation
   5. Software Estimation
   6. Software Testing
A possible set of applications may be the following:
   a. Library System
   b. Student Marks Analyzing System
   c. Text Editor.
   d. Create a dictionary.
   e. Telephone directory.
   f. Inventory System.

TOTAL: 45 PERIODS
MC7412  NETWORK PROGRAMMING LABORATORY  L T P C  0 0 3 2

1. Implementation of File System Calls
2. Implementation of ICP Techniques – Pipe, Message Queue, Shared Memory
3. Socket Programming
   a) TCP Sockets
   b) UDP Sockets
   c) Applications using Sockets
4. Simulation of Sliding Window Protocol
5. Simulation of Routing Protocols
6. RPC
7. Development of applications such as DNS / HTTP / E-mail / Multi-user chat

TOTAL : 45 PERIODS

MC7413  TECHNICAL SEMINAR AND REPORT WRITING  L T P C  0 0 3 2

The goal of this course is to train the students to critically evaluate a well-defined set of research subjects and to summarize the findings concisely in a paper of scientific quality. The paper will be evaluated based on the ability to understand a topic, communicate it and identify the issues. Results from this term paper will be presented to fellow students and a committee of faculty members.

1. Every student selects a topic related to current trends and the same should be approved by the respective committee. This selection should have at least 5 distinct primary sources.
2. Every student must write a short review of the topic and present it to fellow students and faculty (discuss the topic – expose the flaws – analyze the issues) every week.
3. The faculty should evaluate the short review and award marks with respect to the following.
   a. Has the student analyzed – not merely quoted – the most significant portions of the primary sources employed?
   b. Has the student offered original and convincing insights?
   c. Plagiarism to be checked.
4. Every student should re-submit and present the review article including issues/ comments/ conclusions which had arisen during the previous discussion.
5. Every student should submit a final paper as per project specifications along with all short review reports (at least 4 internal reviews) and corresponding evaluation comments.
6. Every student should appear for a final external review exam to defend themselves.

TOTAL: 45 PERIODS
COURSE OBJECTIVES:
- To acquire knowledge on the usage of recent platforms in developing web applications
- To understand architecture of J2EE and design applications using J2EE, Strut and hypernet
- To understand framework of .NET and design applications using .NET, C#, Silverlite
- To Design and develop interactive, client-side, server-side executable web applications LAMP Stack.

UNIT I J2EE Platform
- Introduction -Enterprise Architecture Styles - J2EE Architecture - Containers - J2EE Technologies - Developing J2EE Applications - Naming and directory services - Using JNDI - JNDI Service providers - Java and LDAP - LDAP operations - Searching an LDAP server - Storing and retrieving java objects in LDAP - Application Servers - Implementing the J2EE Specifications - J2EE packaging and Deployment - J2EE packaging overview - Configuring J2EE packages

UNIT II STRUTS AND HIBERNATE

UNIT III LAMP STACK
- Overview of Lamp Stack - Features of Lamp Stack - Understanding Python Understanding LAMP and Its Effect on Web Development

UNIT IV .Net, C#

UNIT V ASP.NET AND SILVERLIGHT

TOTAL : 45 PERIODS

COURSE OUTCOMES:
- Knows how to design and implement Internet systems for enhancing education and engineering design,
- Able to understand functionality of Internet system
- Able to design a system according to customer needs using the available Internet technologies
- Able to Design and develop interactive, client-side, server-side executable web applications.
- Explore the features of various platforms and frameworks used in web applications development
REFERENCES:
2. Patrick Peak And Nick Heudecker, Patrick Peak, Nick Heudecker Hibernate Quickly, "
   2007Dreamtech
3. Subrahmanyam Allamaraju and Cedric Buest , "Professional Java Server Programming(J2EE 1.3
   Edition), ", Shroff Publishers & Distributors Pvt Ltd
5. Mario Szpuszta, Matthew MacDonald , “Pro ASP.NET 4 in C# 2010: Includes Silverlight 2,
   “Apress, Third Edition
   ebooks-library.com
7. James Lee, Brent Ware , “Open Source Development with LAMP: Using Linux, Apache, MySQL,
   Perl, and PHP” Addison Wesley, Pearson 2009

MC7502 SERVICE ORIENTED ARCHITECTURE L T P C

3 0 0 3

COURSE OBJECTIVES:
- To provide fundamental concepts of Service Oriented Architecture..
- To gain knowledge about SOAP, UDDI and XML to create web services.
- To know about the Cloud Computing architecture and services.

UNIT I SOA BASICS 9
Roots of SOA – Characteristics of SOA - Comparing SOA to client-server and distributed
internet architectures – Anatomy of SOA- How components in an SOA interrelate
- Principles of service orientation – Service Layers.

UNIT II XML AND WEB SERVICES 9
XML structure – Elements – Creating Well-formed XML - Name Spaces – Schema Elements, Types,

UNIT III WSDL, SOAP and UDDI 9
Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments – UDDI.

UNIT IV SOA in J2EE and .NET 9
SOA platform basics – SOA support in J2EE – Java API for XML-based web services
(JAX-WS) - Java architecture for XML binding (JAXB) – Java API for XML Registries
(JAXR) - Java API for XML based RPC (JAX-RPC) – JAX-RS SOA support in .NET – ASP.NET web
services.

UNIT V CLOUD COMPUTING 9
Vision of Cloud computing – Cloud Definition – Characteristics and Benefits – Virtualization – Cloud

TOTAL : 45 PERIODS
COURSE OUTCOMES:
- Known about the basic principles of service oriented architecture, its components and techniques
- Understand the architecture of web services
- Able to design and develop web services using protocol
- Understand technology underlying the service design
- Acquire the fundamental knowledge of cloud computing

REFERENCES:

MC7503 MOBILE COMPUTING L T P C 3 0 0 3

COURSE OBJECTIVES:
- To learn the basic concepts, aware of the GSM, SMS, GPRS Architecture.
- To have an exposure about wireless protocols -WLN, Bluetooth, WAP, ZigBee issues.
- To Know the Network, Transport Functionalities of Mobile communication
- To understand the concepts of Adhoc and wireless sensor networks.
- To impart knowledge about Mobile Application Development

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS, ARCHITECTURE 9

UNIT II MOBILE WIRELESS SHORT RANGE NETWORKS 9

UNIT III MOBILE IP NETWORK LAYER, TRANSPORT LAYER 9
UNIT IV  MOBILE AD-HOC, SENSOR NETWORKS
Introduction to Mobile Ad hoc Network- MANET-Routing and Routing Algorithm-Security – Wireless
Sensor Networks-Applications- Distributed Network and Characteristics-Communication Coverage-
Sensing Coverage-Localization- Routing -Function Computation- Scheduling

UNIT V  MOBILE APPLICATION DEVELOPMENT
Mobile Applications Development -Application Development Overflow-Techniques for Composing
Applications - Understanding the Android Software Stack – Android Application Architecture –
First Android Activity – Creating Applications and Activities – Creating User Interfaces – Intents –
Broadcast Receivers – Adapters – Data Storage, Retrieval, and Sharing.-Geo services- creating
mobile applications like game, Clock, calendar, Convertor, phone book, Text Editor

COURSE OUTCOMES:
• Gain the knowledge about various types of Wireless Data Networks and Wireless Voice Networks.
• understand the architectures, the challenges and the Solutions of Wireless Communication those
  are in use.
• realize the role of Wireless Protocols in shaping the future Internet.
• know about different types of Wireless Communication Networks and their functionalities.
• Able to develop simple Mobile Application Using Android

REFERENCES
   Pub ,Aug – 2010
   Morgan Kaufmann Series in Networking, 2009( introduction, WLAN MAC)
5. Jochen Schiller “Mobile Communications” Pearson Education second Edition
6. Donn Felker ,’Android Application Development For Dummies, Wiley, 2010
7. Reto Meier,Professional Android 2 Application Development, Wrox’s Programmer to Programmer
   series
   Pragmatic Programmers, 2012

TOTAL: 45 PERIODS

34
1. Develop a car showroom inventory web application with 2-tier architecture. Use JSP and JDBC
2. Develop a real estate web application with n-tier architecture. Use JSP, Servlets and JDBC. The application should be able to add and search all properties such as rental/own, individual/apartment and duplex/semi-duplex
3. Develop any web application which authenticates using LDAP
4. Develop a standalone java application or a web application to add, modify and delete the LDAP attributes of the given input
5. Design a student identity management web application using Struts framework. The application should be able to provide an identity such as student id, access to department assets with department id, access to lab assets with lab id.
6. Create an online bookstore that includes all validation controls available in ASP.NET
7. Create a component that receives two numbers from the user through a Web Form, and based on the user’s selection add or subtract the two numbers and returns the result to the Web Form. The result should be displayed in the Web Form using ASP.NET
8. Create a Silverlight Application for the SharePoint Client Object Model
9. Create a graph using the SharePoint Object Model and Silverlight Graphing controls

TOTAL: 45 PERIODS

1. XML document creation.
2. Importing and Exporting XML document in database.
3. XSL Transformation
4. Internal and External DTD creation
5. XML Schema creation
7. Web Service creation using JAX-WS
8. Web Service creation using JAX-RS
9. Web Service creation using .NET
10. JAXB Marshaling and Unmarshaling

A possible set of applications may be the following:
  a. Currency Conversion
  b. Temperature Conversion
  c. Ticket Booking
  d. Dictionary

TOTAL: 45 PERIODS
**MC7513**  
**MINI PROJECT (SOCIALLY RELEVANT)**  
**L T P C**  
**0 0 3 2**  
- Team Project with a maximum of four in a team  
- Students shall select a domain and develop an application with social relevance  
- Documentation is to be based on the standards  
- Evaluation pattern is like Lab examination  
- Need to submit a report, presentation with demo.  
- User Based Testing and feedback from the benefited society required  

**TOTAL: 45 PERIODS.**

**MC7001**  
**GAME PROGRAMMING**  
**L T P C**  
**3 0 0 3**

**COURSE OBJECTIVES:**  
- To understand of game design and development  
- To understand the processes, mechanics, issues in game design, game engine development  
- To understand modeling, techniques, handling situations, and logic.

**UNIT I 3D GRAPHICS FOR GAME PROGRAMMING**  
Coordinate Systems, Ray Tracing, Modeling in Game Production, Vertex Processing, Rasterization, Fragment Processing and Output Merging, Illumination and Shaders, Parametric Curves and Surfaces, Shader Models, Image Texturing, Bump Mapping, Advanced Texturing, Character Animation, Physics-based Simulation

**UNIT II GAME DESIGN PRINCIPLES**  
Character development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level design, Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding

**UNIT III GAMING ENGINE DESIGN**  
Renderers, Software Rendering, Hardware Rendering, and Controller based animation, Spatial Sorting, Level of detail, collision detection, standard objects, and physics

**UNIT IV GAMING PLATFORMS AND FRAMEWORKS**  
Flash, DirectX, OpenGL, Java, Python, XNA with Visual Studio, Mobile Gaming for the Android, iOS, Game engines - Adventure Game Studio, DXStudio, Unity

**UNIT V GAME DEVELOPMENT**  
Developing 2D and 3D interactive games using OpenGL, DirectX – Isometric and Tile Based Games, Puzzle games, Single Player games, Multi Player games.  

**TOTAL: 45 PERIODS**

**COURSE OUTCOMES:**  
- Able to understand and apply 3D concepts in Game programming.  
- Gain knowledge about principles and levels of design in various game development  
- Gain knowledge about gaming engine design for controlling  
- Explore into various platforms and frameworks available for game development  
- Able to design and develop interactive games
REFERENCE BOOKS:
10. Andy Harris, “Beginning Flash Game Programming For Dummies”, For Dummies; Updated edition, 2005.

MC7002 SOFT COMPUTING L T P C
3 0 0 3

COURSE OBJECTIVES

- To learn the key aspects of Soft computing
- To know about the components and building block hypothesis of Genetic algorithm.
- To understand the features of neural network and its applications
- To study the fuzzy logic components
- To gain insight onto Neuro Fuzzy modeling and control.
- To gain knowledge in machine learning through Support vector machines.

UNIT I INTRODUCTION TO SOFT COMPUTING 9
Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics

UNIT II GENETIC ALGORITHMS 9
Introduction, Building block hypothesis, working principle, Basic operators and Terminologies like individual, gene, encoding, fitness function and reproduction, Genetic modeling: Significance of Genetic operators, Inheritance operator, cross over, inversion & deletion, mutation operator, Bitwise operator, GA optimization problems, JSPP (Job Shop Scheduling Problem), TSP (Travelling Salesman Problem), Differences & similarities between GA & other traditional methods, Applications of GA.
UNIT III  NEURAL NETWORKS 9

UNIT IV  FUZZY LOGIC 9

UNIT V  NEURO-FUZZY MODELING 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
• Implement machine learning through neural networks.
• Gain Knowledge to develop Genetic Algorithm and Support vector machine based machine learning system
• Write Genetic Algorithm to solve the optimization problem
• Understand fuzzy concepts and develop a Fuzzy expert system to derive decisions.
• Able to Model Neuro Fuzzy system for data clustering and classification.

REFERENCES:
11. ROSS TIMOTHY J, Fuzzy Logic with Engineering Applications, Wiley India Pvt Ltd, New Delhi, 2010
MC7003 ACCOUNTING AND FINANCIAL MANAGEMENT  L T P C  3 0 0 3

COURSE OBJECTIVES

- To understand the basic principles of Double entry system and preparation of balance sheet.
- To understand the process of estimating the cost of a particular product.
- To Prepare the estimate for various business activities such as purchase, sale, production and cash budgets
- To ensure decision making process of an organization.

UNIT I FINANCIAL ACCOUNTING  9

UNIT II ACCOUNTING  9

UNIT III BUDGETS AND BUDGETING CONTROL  9
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  9

UNIT V FINANCING DECISION AND WORKING CAPITAL MANAGEMENT  9

COURSE OUTCOMES

- Able to understand the balance sheet preparation and do analysis
- Able to understand the budget preparation and control of a company
- Helps to decide about the state of affairs of a particular firm / company.
- Ensures the preparation of fiscal policies of the organization.
- Ensures the factors to be considered in investment policies.

REFERENCES:
MC7004  ENERGY AWARE COMPUTING  L  T  P  C  3 0 0 3

COURSE OBJECTIVES:
- To examine the design of power efficient architecture, power and performance tradeoffs, restructuring of software and applications and standards for energy aware Hardware and Software.
- To know the fundamental principles energy efficient devices
- To study the concepts of Energy efficient storage
- To introduce energy efficient algorithms
- Enable the students to know energy efficient techniques involved to support real-time systems.
- To study Energy aware applications.

UNIT I  INTRODUCTION  9
Energy efficient network on chip architecture for multi core system-Energy efficient MIPS CPU core with fine grained run time power gating – Low power design of Emerging memory technologies.

UNIT II  ENERGY EFFICIENT STORAGE  9

UNIT III  ENERGY EFFICIENT ALGORITHMS  9

UNIT IV  REAL TIME SYSTEMS  9

UNIT V  ENERGY AWARE APPLICATIONS  9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- To Design Power efficient architecture Hardware and Software.
- To analyze power and performance trade off between various energy aware storage devices.
- To implement various energy aware algorithms.
- To restructure the software and Hardware for Energy aware applications.
- To know the Energy aware applications

REFERENCE BOOKS:
MC7005 SECURITY IN COMPUTING L T P C 3 0 0 3

COURSE OBJECTIVES:

- To understand the basics of cryptography
- learn to find the vulnerabilities in programs and to overcome them,
- know the different kinds of security threats in networks and its solution
- know the different kinds of security threats in databases and solutions available
- learn about the models and standards for security.

UNIT I ELEMENTARY CRYPTOGRAPHY 9

UNIT II PROGRAM SECURITY 9

UNIT III SECURITY IN NETWORKS 9

UNIT IV SECURITY IN DATABASES 9

UNIT V SECURITY MODELS AND STANDARDS 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:

- Apply cryptographic algorithms for encrypting and decryption for secure data transmission
- Understand the importance of Digital signature for secure e-documents exchange
- Understand the program threats and apply good programming practice
- Get the knowledge about the security services available for internet and web applications
- Understand data vulnerability and sql injection
- Gain the knowledge of security models and published standards

REFERENCES:

MA7071  NUMERICAL AND STATISTICAL METHODS  L T P C  3 0 0 3

COURSE OBJECTIVES:
- To understand and apply numerical methods for solving systems of linear equations
- To understand and apply numerical integration and differentiation
- To solve initial value problems of ordinary differential equations numerically
- To provide an understanding of the statistical methods and probabilistic concepts by which real-life problems are analyzed
  (Focus on problems- No derivations)

UNIT I  LINEAR SYSTEM OF EQUATIONS  9
Solution of Systems of equations – Solution of Simultaneous linear equations – Gauss elimination methods – Gauss Jordan methods, Jacobi and Gauss Seidal iterative methods

UNIT II  NUMERICAL DIFFERENTIATION AND INTEGRATION  9
Interpolation, Differentiation and integration – difference table – Newton’s forward and backward interpolation –Lagrangian interpolation –Differentiation formulae– Trapezoidal and Simpson rule Gaussian – Quadrature

UNIT III  DIFFERENTIAL EQUATIONS  9

UNIT IV  PROBABILITY DISTRIBUTIONS  9
Probability axioms- Bayes Theorem- One dimensional Discrete random variables and Continuous random variables – Density and Distribution functions – Binomial and normal distribution

UNIT V  SAMPLING DISTRIBUTIONS  9
Small sample, t-test, F-test, $\chi^2$ –test, ANOVA one way classification and two way classification

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Develop a good understanding of the various methods used for the numerical solution of scientific problems
- Able to solve system of linear equations and initial value problems of ordinary differential equations numerically
- Help to understand the value of probability and Statistics in acquiring knowledge and making decisions
- Develop an ability to apply statistical tests in experiments, as well as to analyze and interpret data
REFERENCES:

MC7006 M - COMMERCE

COURSE OBJECTIVES:
• To understand the E-commerce strategies and value chains
• To understand the M-commerce services
• To understand M-commerce infrastructure and applications.
• To know the availability of latest technology and applications of M-commerce in various domains.
• To apply mobile commerce in business-to-business application.

UNIT I ELECTRONIC COMMERCE
Introduction - The e-commerce environment - The e-commerce marketplace - Focus on portals, Location of trading in the marketplace - Commercial arrangement for transactions - Focus on auctions - Business models for e-commerce - Revenue models - Focus on internet start-up companies - the dot-com - E-commerce versus E-business.

UNIT II MOBILE COMMERCE

UNIT III MOBILE COMMERCE: TECHNOLOGY
A Framework For The Study Of Mobile Commerce – NTT DoCoMo’s i-Mode – Wireless Devices For Mobile Commerce – Towards A Classification Framework For Mobile Location Based Services – Wireless Personal And Local Area Networks – The Impact Of Technology Advances On Strategy Formulation In Mobile Communications Networks

UNIT IV MOBILE COMMERCE: THEORY AND APPLICATIONS

UNIT V BUSINESS TO BUSINESS MOBILE E-COMMERCE

TOTAL: 45 PERIODS

43
COURSE OUTCOMES:
- Able to apply E – commerce principles in market place.
- Able to apply M – commerce principles to various business domains
- Understand the theory and applications of M-commerce in business domain
- Get an exposure to current technological advancements in M-commerce.
- Able to build M – commerce business models.

REFERENCE BOOKS:
6. Dr.Pandey, Saurabh Shukla E-commerce and Mobile commerce Technologies, Sultan Chand, 2011

MC7007 HEALTH CARE MANAGEMENT

COURSE OBJECTIVES:
- To understand the basic concepts of health care system.
- To know about creating and maintaining health care information systems
- To ensure access of clinical information system on the fly
- To understand IT governance and assessment of health care information system

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. Case study

TOTAL : 45 PERIODS
COURSE OUTCOMES:
- Develop an understanding of basic research skills applicable to the design, evaluation and implementation of appropriate Healthcare Information Systems (HIS);
- Define and analyse the impact, strengths and weaknesses of various HIS in any healthcare settings
- Write reports on the roles of HIS and their impact on facilitating superior healthcare delivery
- Design a suitable HIS architecture
- Use research methods and analysis together to plan the successful implementation of an appropriate HIS solution

REFERENCE BOOKS:

MC7008 GEOLOGICAL INFORMATION SYSTEMS

COURSE OBJECTIVES:
- Understand the basic concepts of Geological information systems.
- To provide an exposure to spatial database structures and their utility in GIS.
- To understand the process of scanning, digitizing and georeferencing.
- To introduce the raster and vector geoprocessing capabilities of GIS.

UNIT I SPATIAL DATA REPRESENTATION

UNIT II DATA DIGITIZATION AND PREPARATION

UNIT III RASTER DATA ANALYSIS
Raster Geospatial Data Analysis-Local operations: Reclassification, Logical and Arithmetic overlay operations – Neighbourhood operations: Aggregation, Filtering, Slope and Aspect map – Extended neighbourhood operations: - Statistical Analysis, Proximity, Connectivity operations, Buffering, Viewshed analysis – Regional operations: Area, Perimeter, Shape, Identification of region and Classification-output functions of Raster geoprocessing
UNIT IV VECTOR DATA PROCESSING

UNIT V GIS MODELLING AND APPLICATIONS

COURSE OUTCOMES:
- Understand GIS concepts and spatial data representation
- Able to design spatial data input in raster form as well as vector form
- Understand vector data analysis and output functions
- Understand raster data geo processing
- Able to design a GIS model for real world problem

REFERENCES:

MC7009 HUMAN RESOURCE MANAGEMENT

COURSE OBJECTIVES:
- To understand the importance of human resources.
- To describe the steps involved in the human resource planning process
- To understand the stages of employee socialization and training needs.
- To know about the purposes of performance management systems and appraisal.
- To know the list of occupational safety and health administration enforcement priorities.

UNIT I FUNDAMENTALS OF HRM

UNIT II STAFFING, RECRUITMENT AND SELECTION
UNIT III TRAINING AND DEVELOPMENT 9
Socialization – new employee orientation, training, development – organizational development – methods – evaluating training – international training and development issues – career development - value for organization and individual – mentoring and coaching – traditional career stages

UNIT IV PERFORMANCE EVALUATION, REWARDS AND BENEFITS 9

UNIT V SAFE AND HEALTHY WORK ENVIRONMENT 9

TOTAL: 45 PERIODS

OUTCOMES
- Identify the primary external influences affecting HRM.
- Outline the components and the goals of staffing, training and development.
- Understand the selection procedure in various organizations.
- Understand the practices used to retain the employees and able to evaluate their performance.
- Able to identify the stress and the cause of burn out.

REFERENCES:

MC7010 ENTERPRISE APPLICATION INTEGRATION L T P C
3 0 0 3

COURSE OBJECTIVES:
- Describe approaches to enterprise application integration
- Understand the integration middleware
- Evaluate the integration approaches suitable for a given problem

UNIT I INTRODUCTION 6
Requirements for EAI - Challenges in EAI – Integration with legacy systems – Integration with partners - Heterogeneous environment – Implementation approaches – Web services, messaging, ETL, direct data integration – Middleware requirements – Approaches to integration – services oriented and messaging.
UNIT II INTEGRATION PATTERNS
Introduction to integration patterns – Architecture for application integration – Integration patterns – Point to point, broker, message bus, publish/subscribe, Challenges in performance, security, reliability - Case studies

UNIT III SERVICE ORIENTED INTEGRATION
Business process integration - Composite applications-services – Web services – Service choreography and orchestration - Business process modeling - BPMN, Business process execution - BPEL – Middleware infrastructure - Case studies

UNIT IV MESSAGING BASED INTEGRATION

UNIT V ENTERPRISE SERVICE BUS
Enterprise Service Bus – routing, scalable connectivity, protocol and message transformations, data enrichment, distribution, correlation, monitoring – Deployment configurations – Global ESB, Directly connected, Federated, brokered ESBs – Application server based – Messaging system based – Hardware based ESBs – Support to SOA, message based and event based integrations - Case studies.

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Upon Completion of the course, the students will be able to
• Describe different approaches to integration enterprise applications
• Analyze specifications and identify appropriate integration approaches
• Develop a suitable integration design for a given problem
• Identify appropriate integration middleware for a given problem
• Evaluate the integration approaches against specified requirements

REFERENCES
MC7011  BIG DATA ANALYTICS  L T P C
3 0 0 3

COURSE OBJECTIVES:
- To explore the fundamental concepts of big data analytics
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts.

UNIT I  INTRODUCTION TO BIG DATA  8
Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis –
Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools -

UNIT II  MINING DATA STREAMS  9
Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing -
Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating
Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP)
Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT III  HADOOP  10
History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the
Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFS-Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce
Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and
Formats- Map Reduce Features

UNIT IV  HADOOP ENVIRONMENT  9
Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop
benchmarks- Hadoop in the cloud

UNIT V  FRAMEWORKS  9
Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services –
HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere
BigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

TOTAL : 45 PERIODS

COURSE OUTCOMES:
The students will be able to:
- Work with big data platform
- Analyze the big data analytic techniques for useful business applications.
- Design efficient algorithms for mining the data from large volumes.
- Analyze the HADOOP and Map Reduce technologies associated with big data analytics
- Explore on Big Data applications Using Pig and Hive
- Understand the fundamentals of various bigdata analysiss techniques
REFERENCES
11. Michael Minelli (Author), Michele Chambers (Author), Ambiga Dhiraj (Author) , Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today’s Businesses,Wiley Publications,2013

MC7012 AD-HOC AND SENSOR NETWORKS L T P C 3 0 0 3

COURSE OBJECTIVES:
- To understand the basics of Ad-hoc & Sensor Networks
- To learn various fundamental and emerging protocols of all layers in ad-hoc network
- To study about the issues pertaining to major obstacles in establishment and efficient management of ad-hoc and sensor networks
- To understand the nature and applications of ad-hoc and sensor networks
- To understand various security practices and protocols of Ad-hoc and Sensor Networks

UNIT I ADHOC NETWORKS FUNDAMENTALS AND MAC PROTOCOLS 9

UNIT II ADHOC NETWORK ROUTING AND MANAGEMENT 9
UNIT III  SENSOR NETWORK COMMUNICATION PROTOCOLS  9

UNIT IV  SENSOR NETWORK MANAGEMENT AND PROGRAMMING  9

UNIT V  ADHOC AND SENSOR NETWORK SECURITY  9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
At the end of the course the students will be able to:

- Work with existing Ad-hoc and sensor network protocols and standards.
- Create a Sensor network environment for different type of applications
- Design ad-hoc and sensor network architectures using QoS and Congestion control mechanisms
- Interpret the various control fields of the protocol in each layer
- Select appropriate routing algorithms for different network environments
- Program ad-hoc and sensor network for various applications
- Deploy security mechanisms in the wireless ad-hoc and sensor networks

REFERENCES:

51
MC7013  SEMANTIC WEB  L T P C  3 0 0 3

COURSE OBJECTIVES:
- To understand the need of semantic web in web services
- To know the methods to discover, classify and build ontology for more reasonable results in searching
- To build and implement a small ontology that is semantically descriptive of chosen problem domain
- To implement applications that can access, use and manipulate the ontology

UNIT I  INTRODUCTION
9

UNIT II  ONTOLOGICAL ENGINEERING
9

UNIT III  STRUCTURING AND DESCRIBING WEB RESOURCES
9

UNIT IV  WEB ONTOLOGY LANGUAGE
9

UNIT V  SEMANTIC WEB TOOLS AND APPLICATIONS
9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
- Understand semantic web basics, architecture and technologies
- Able to represent data from a chosen problem in XML with appropriate semantic tags obtained or derived from the ontology
- Able to understand the semantic relationships among these data elements using Resource Description Framework (RDF)
- Able to design and implement a web services application that “discovers” the data and/or other web services via the semantic web
- Able to discover the capabilities and limitations of semantic web technology for social networks
REFERENCES:

MC7014 SOFTWARE TESTING AND QUALITY ASSURANCE  L T P C
3 0 0 3

COURSE OBJECTIVES:
• To know the behavior of the testing techniques to detect the errors in the software
• To understand standard principles to check the occurrence of defects and its removal.
• To learn the functionality of automated testing tools
• To understand the models of software reliability.

UNIT I TESTING ENVIRONMENT AND TEST PROCESSES

UNIT II TESTING TECHNIQUES AND LEVELS OF TESTING

UNIT III INCORPORATING SPECIALIZED TESTING RESPONSIBILITIES
UNIT IV TEST AUTOMATION

UNIT V SOFTWARE TESTING AND QUALITY METRICS

COURSE OUTCOMES:
- Test the software by applying testing techniques to deliver a product free from bugs
- Evaluate the web applications using bug tracking tools.
- Investigate the scenario and the able to select the proper testing technique
- Explore the test automation concepts and tools
- Deliver quality product to the clients by way of applying standards such as TQM, Six Sigma
- Evaluate the estimation of cost, schedule based on standard metrics

REFERENCES:

MC7015 SOFTWARE PROJECT MANAGEMENT

COURSE OBJECTIVES:
- To know of how to do project planning for the software process.
- To learn the cost estimation techniques during the analysis of the project.
- To understand the quality concepts for ensuring the functionality of the software
UNIT I SOFTWARE PROJECT MANAGEMENT CONCEPTS
Introduction to Software Project Management: An Overview of Project Planning: Select Project, Identifying Project scope and objectives, infrastructure, project products and Characteristics. Estimate efforts, Identify activity risks, and Allocate resources.

UNIT II SOFTWARE EVALUATION AND COSTING

UNIT III SOFTWARE ESTIMATION TECHNIQUES

UNIT IV RISK MANAGEMENT

UNIT V SOFTWARE QUALITY MANAGEMENT
TQM, Six Sigma, Software Quality: defining software quality, ISO9126, External Standards, Comparison of project management software’s: dot Project, Launch pad, openProj. Case study: PRINCE2

TOTAL ; 45 PERIODS

COURSE OUTCOMES:
- Understand the activities during the project scheduling of any software application.
- Learn the risk management activities and the resource allocation for the projects.
- Can apply the software estimation and recent quality standards for evaluation of the software projects
- Acquire knowledge and skills needed for the construction of highly reliable software project
- Able to create reliable, replicable cost estimation that links to the requirements of project planning and managing

REFERENCES:
COURSE OBJECTIVES:
- To introduce the broad perspective of cloud architecture and model
- To understand the concept of Virtualization and design of cloud Services
- To be familiar with the lead players in cloud.
- To understand the features of cloud simulator
- To apply different cloud programming model as per need.
- To learn to design the trusted cloud Computing system

UNIT I  CLOUD ARCHITECTURE AND MODEL  9

UNIT II VIRTUALIZATION  9

UNIT III CLOUD INFRASTRUCTURE  9

UNIT IV PROGRAMMING MODEL  9
Parallel and Distributed Programming Paradigms – MapReduce, Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments - Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim

UNIT V SECURITY IN THE CLOUD  9

TOTAL:45 PERIODS

COURSE OUTCOMES:
- Compare the strengths and limitations of cloud computing
- Identify the architecture, infrastructure and delivery models of cloud computing
- Apply suitable virtualization concept.
- Choose the appropriate cloud player , Programming Models and approach.
- Address the core issues of cloud computing such as security, privacy and interoperability
- Design Cloud Services and Set a private cloud
REFERENCES:
5. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud” O'Reilly

MC7017 NETWORK PROTOCOLS

OBJECTIVES:
- To understand the existing network architecture models and analyze their performance
- To understand the high speed network protocols and design issues.
- To learn Network Security Technologies and Protocols
- To study various protocols in wireless LAN, MAN.

UNIT I FUNDAMENTALS OF NETWORKING STANDARDS AND PROTOCOLS

UNIT II ROUTED AND ROUTING PROTOCOLS

UNIT III ISDN AND NETWORK MANAGEMENT PROTOCOLS
UNIT IV SECURITY AND TELEPHONY PROTOCOLS


UNIT V NETWORK ENVIRONMENTS AND PROTOCOLS


TOTAL: 45 PERIODS

OUTCOME:

• Ability to study, analyze and design seven layers of protocols of wired and wireless networks.

REFERENCES: