### BHARATHIAR UNIVERSITY::COIMBATORE-641 046
### B.Sc. COMPUTER TECHNOLOGY With
### COMPULSORY DIPLOMA IN COMPUTER NETWORKING
(For the students admitted from the academic year 2008-2009 and onwards)

#### SCHEME OF EXAMINATION - CBCS PATTERN

<table>
<thead>
<tr>
<th>Part</th>
<th>Study Components</th>
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@ No University Examinations. Only Continuous Internal Assessment (CIA)
# No Continuous Internal Assessment (CIA). Only University Examinations.

| List of Elective papers (Colleges can choose any one of the paper as electives) |
|-----------------|-----------------|
| Elective – I  | A Mobile Computing |
|                | B Distributed Computing |
|                | C Digital Image Processing |
| Elective – II | A Artificial Intelligence and Expert Systems |
|                | B Animation Techniques |
|                | C E-Commerce |
| Elective - III | A Data Mining |
|                | B Embedded Systems |
|                | C Software Testing |
CORE 1: DATA STRUCTURES AND C PROGRAMMING

Subject Description:
This subject deals with the methods of data structures using C programming language.

Goal:
To learn about C programming language using data structural concepts.

Objective:
On successful completion of this subject the students should have:
- Writing programming ability on data structures dealing with Stacks, Queues, List, Searching and Sorting algorithms etc.,

UNIT – I:
Operators and Expressions – Formatted and Unformatted I/O functions – Decision statements – Loop control statements.

UNIT – II:
Arrays – String and its standard functions.
Pointers – Functions – Preprocessor directives: #define, #include, #ifndef, Predefined macros.

UNIT – III:
Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, Bit fields, Enumerated data types, Union.
Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, Command line arguments, I/O redirection.

UNIT – IV:
Single linked list, Linked list with and without header, Insertion, Deletion, Double linked list – Queues: Various positions of queue, Representation

UNIT V:
Searching and Sorting – Searching: Linear, Binary.
Sorting – Insertion, Selection, Bubble, Quick, Tree, Heap.

TEXT BOOK:

REFERENCE BOOK:
CORE 2 : COMPUTER ORGANISATION AND ARCHITECTURE

Subject Description:
This subject deals with fundamentals of digital computers, Microprocessors and system architecture.

Goal:
To learn about computer fundamentals and its organization.

Objective:
On successful completion of this subject the students should have:
- Knowledge on digital circuits
- Interfacing of various components

Unit I
Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code.


Unit II
Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don’t care combinations - Product of sum, Sum of products, simplifications.


Unit III
CENTRAL PROCESSING UNIT: General register organization – control word – examples of Micro operations – Stack organization – Instruction formats – Addressing modes – Data transfer and manipulation control.

Unit IV

Unit V
Text Books:

Reference Books:
ISRD group - TATA McGRAW-HILL

CORE LAB 1 : C PROGRAMMING LAB USING DATA STRUCTURES

1. Write a C program to create two array list of integers. Sort and store the elements of both of them in the third list.

2. Write a C program to experiment the operation of STACK using array implementation.

3. Write a C program to create menu drive program to implement QUEUE to perform the following:
   I. Insertion
   II. Deletion
   III. Modification
   IV. Listing of elements using pointers

4. Write a C program to create LINKED LIST representation of employee records and do the following operations using pointers:
   I. To add a new record
   II. To delete an existing record
   III. To print the information about an employee
   IV. To find the number of employees in the structure

5. Write a C program to count the total nodes of the linked list.

6. Write a C program to insert an element at the end of the linked list.

7. Write a C program to insert an element at the beginning of the Double linked list.

8. Write a C program to display the hash. table, which is to be prepared by using the Mid-square method.

9. Write a C program to demonstrate Binary search.
10. Write a C program to insert nodes into a Binary tree and to transverse in pre-order.
11. Write a C program to arrange a set of numbers in ascending order using QUICK-SORT.
12. Write a C program to arrange a set of numbers in descending order using EXCHANGE-SORT.
Allied Paper 1: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE

Subject Description:
This subject deals with mathematical concepts like Matrices, Numerical analysis and Statistical methods for computer science and applications.

Goal:  To learn about the mathematical structures for computer based applications.

Objective:  On successful completion of this subject the students should have:
- Understanding the concepts of mathematics
- Learning applications of statistical and numerical methods for Computer Science.

Unit I

Unit II

Unit III

Unit IV
Measures of central tendency – Mean Media and Mode – Relationship among mean media and mode. Measures of dispersion – Range, quartile deviation, mean deviation and Standard deviation

Unit V

Text Book:
1. Engineering Mathematics Volume II – Dr M.K. Venkataraman - NPC (Unit I)
3. Business Statistics - S.P. Gupta & M.P. Gupta Sultan Chand and Sons (Unit IV & V)

Reference Book:
2. Fundamental of Mathematical statistics S C Gupta, V. K. Kapoor Sultan Chand and Sons
Subject Description:
This subject deals with Object–oriented programming concepts using C++.

Goal:
To learn about on Object–oriented Programming concept.

Objective:
On successful completion of this subject the students should have:
- Writing programming ability on OPPS concepts like Encapsulation, Abstraction, Inheritance, Polymorphism and Exception handling etc.,

UNIT-I
Introduction to C++ - key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures : - Decision Making and Statements : If .. else , jump, goto, break, continue, Switch case statements - Loops in C++ : For,While, Do - Functions in C++ - Inline functions – Function Overloading.

UNIT-II
Class and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions – Bit fields and Class – Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static member.

UNIT-III

UNIT-IV
Pointers: Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding , Polymorphism and Virtual Functions.

UNIT-V

TEXT BOOKS:

REFERENCE BOOKS:
1. Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function POP( ) to delete an element. Check for overflow and underflow conditions.

2. Create a class ARITH which consists of a FLOAT and an integer Variable. Write member functions ADD( ), SUB ( ), MUL ( ), DIV ( ), MOD ( ) to perform addition, multiplication, division and modulus Respectively. Write member functions to get and display values.

3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix. Overload the operators +, -, * to add subtract and multiply two matrices. Write member functions to get and display MAT object values.

4. Create a class STRING. Write member function to initialize, get and display strings. Overload the operator + to concatenate two strings, = = to compare two strings and a member function to find the length of the string.

5. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic-salary, and grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da, hra, pf depending on the grade and Display the Payslip in a neat format using console I/O.

6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area( ) and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three classes SQUARE, RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result.

7. Create two classes which consists of two private variables, one float And one integer variables in each class. Write member functions to get and display them. Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.

8. Write a user defined function USERFUN( ) which has the formatting commands like setw( ) , showpoint , showpos precision( ). Write a program which prints an multiplication table and uses USERFUN( ) for formatting.

9. Write a program to perform Insertion, Deletion and Updation using files.

10. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.
ALLIED PAPER 2 : DISCRETE MATHEMATICS

Subject Description:
This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

Goal: To learn about the discrete structures for computer based applications.

Objective:
On successful completion of this subject the students should have:
- Understanding the concepts of discrete mathematics
- Learning applications of discrete structures in Computer Science.

Unit I

Unit II

Unit III
Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

Unit IV

Unit V

Text Books:

Reference Books:
CORE 4: RDBMS AND ORACLE


TEXTBOOKS:
DATABASE SYSTEMS USING ORACLE – Nilesh Shah, 2nd edition, PHI.
(UNIT-I: Chapters 1 & 2 UNIT-II: Chapters 3 & 4 UNIT III: Chapters 5 & 6 UNIT-IV: Chapters 10 & 11 UNIT-V: Chapters 12, 13 & 14)

REFERENCE BOOKS:
1. DATABASE MANAGEMNET SYSTEMS – Arun Majumdar, Pritimoy Bhattacharya. 2007, TMH.
2. DATABASE MANAGEMETN SYSTEMS – Gerald V. Post, 3rd edition, TMH.
CORE 5 : VISUAL PROGRAMMING (VISUAL BASIC)

Subject Description: This Subject deals with the Visual Programming.

Goal: To learn about Visual Programming.

Objective: On Successful Completion of this subject the students should have:
- Writing Programming ability on Visual Basic.

UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:
Clip Board, DDE, OLE, Data Control – Programming with Data Control – Monitoring Changes to the Databases – SQL – Basics Database Objects.

TEXT BOOK:
CORE LAB 3 : VISUAL PROGRAMMING LAB – VB WITH MS ACCESS

1. Develop a VB Project to Check User Name & Password Given by User.
2. Develop a VB Project to Add & Remove Items From List Box.
3. Develop a VB Project to Copy all Items in a List Box to Combo Box.
4. Develop a VB Project to Enter and Display Student Information.
5. Develop a VB Project to Scroll Text from Left to Right Using Timer.
6. Develop a VB Project to Mini Calculator Functions.
7. Develop a VB Project to Documents typing using MDI Form.

Use Employee Information For the Following Projects.

8. Develop a VB Project to Search a Record in MS-ACCESS database using data control.
9. Develop a VB Project to Delete a Record from MS-ACCESS database using data control.
11. Develop a VB Project to Insert a Record in MS-ACCESS database using ADO.
12. Develop a VB Project to Modify a record in MS-ACCESS database using ADO.
ALLIED PAPER 3 : MICROPROCESSORS AND ALP

UNIT I
Intel 8086 -Pin Description of Intel 8086 -Operating modes of 8086 -Register organization of 8086 -BIU and EU -Interrupts -8086 based computer system -Addressing Modes of 8086.

UNIT II
8086 Instruction Set -Instruction Groups -Addressing Mode Byte -Segment Register Selection - Segment Override -8086 Instructions.
Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array - Numbers in Ascending and Descending order -Block Move or Relocation -Block Move using REP instruction -Sum of a series -Multibyte Addition.

UNIT III

UNIT IV
Input devices -Output devices -Memory and VO addressing -8086 Addressing and Address Decoding -Programmable VO Ports -DMA Data Transfer.
Other Microprocessors -PowerPC Microprocessors -Pentium Microprocessors -Pentium Pro microprocessor -Alpha Microprocessor -Cyrix Microprocessor -MIPS Microprocessor – AMD Microprocessor.

UNIT V
MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040 Interfacing of AID Converter and Applications: Introduction -Interfacing of ADC 0808 or ADC 0809 to Intel 8086 -Bipolar to Unipolar Converter -Sample and Hold Circuit, LF 398 -Microprocessor based Measurement and Control of Physical Quantities.

TEXT BOOK
UNIT- I


UNIT- II

Analog and digital transmission methods: Introduction - Analog signal, Analog transmission - Digital signal, Digital transmission - Digital signal , Analog transmission - Baud rate and bits per second - Analog signal, Digital (Storage and) transmission - Nyquist Theorem.  

Modes of data transmission and Multiplexing: Introduction – Parallel and Serial communication - Asynchronous, Synchronous and Isochronous communication - Simplex, Half-duplex and Full-duplex communication – Multiplexing - Types of Multiplexing - FDM versus TDM.  


UNIT- III


UNIT- IV


UNIT- V


Text book:  
CORE 6: JAVA PROGRAMMING

Subject Description:
This Subject deals with the JAVA Programming.

Goal:
To learn about Java.

Objective:
On Successful Completion of this subject the students should have:
- Writing Programming ability on Java like Encapsulation, Data Abstraction, Inheritance, Polymorphism and Exception handling, Applet etc.

UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:

TEXT BOOK:
E. BALAGURUSAMY – “Programming With JAVA a Primer”, 3rd Edition TMH.
CORE 7: CLIENT / SERVER COMPUTING

Subject Description:
This Subject deals with the C/S Computing

Goal: To learn about C/S Computing

Objective:
On Successful Completion of this subject the students should have:
- C/S Applications, GUI ETC.,

UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:

TEXT BOOK:
CORE LAB 4: PROGRAMMING LAB - JAVA

1. Create an Employee Package to Maintain the Information about the Employee. Use Constructors to Initialize the Employee Number and Use Overloading Method to set the Basic Pay of the Employee. By Using this Package Create a Java Program.

2. Program to Implement Polymorphism, Inheritance and Inner Classes.

3. Java Program to Handle Different Mouse Events.


5. Java Program to Maintain the Student Information

6. Animate Images at Different Intervals by using Multithreading Concepts.

7. Program to send a text message to another System and receive the text message from the System.

8. Java Program by using JDBC Concepts to Access a Database.

9. Java Program to Implement RMI.

10. Java Program by using to implement the Tree Viewer.

11. Java Bean Program to view an Image.
ALLIED PAPER 4: COMPUTER INSTALLATION AND SERVICING

Unit – I
PC SYSTEM
Personal Computer System - Functional Blocks - System Unit - Display Unit - Keyboard.

INSIDE PC
Motherboard - BIOS - CMOS-RAM - Motherboard types – Processors – Chipsets – USB.

ON-BOARD MEMORY
PC’s Memory Organization - Memory packaging - I/O Ports - USB Port.

Unit – II
Floppy Disk Drive and Controller - Hard Disk Drive and Controller, MMX – Multimedia Extensions.

Unit – III
Input Devices - Monitors and Display Adapters.

Unit – IV
Output Devices
DOT Matrix Printer - Printer Controller - Laser Printer - Inkjet Printer.

Computer Installation
Power supply - PC Installation.

Unit – V
Trouble shooting and servicing
POST, Trouble shooting the mother board - Trouble shooting the Keyboard - Trouble shooting the disk devices - Trouble shooting the printer.

Maintenance
Diagnostic Software’s - Data Security.

Computers and Communication
Networking – Modem - Internet.

Text Book:
DIPLOMA PAPER 2 (LAB): NETWORK LAB

1. Write a program to Detect Errors using Vertical Redundancy Check (VRC).
2. Write a program to Detect Errors using Longitudinal Redundancy Check (LRC).
3. Write a program to Detect Errors using Cyclic Redundancy Check (CRC).
4. Write a Socket program to implement Asynchronous Communication.
5. Write a Socket program to implement Isochronous Communication.
6. Write a program to implement Stop & Wait Protocol.
7. Write a program to implement Sliding Window Protocol.
8. Write a program to implement the Shortest Path Routing using Dijkstra algorithm.
9. Write a Socket Program to Perform file transfer from Server to the Client.
10. Write a Program to implement Remote Procedure call under Client / Server Environment
CORE 8 : SOFTWARE ENGINEERING

Subject Description:
This Subject deals with the Software Engineering

Goal:
To learn about Software Engineering

Objective:
On Successful Completion of this subject the students should have:

UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:

TEXT BOOK:
CORE 9 : OPERATING SYSTEMS

Subject Description:
This Subject deals with the Operating System.

Goal:
To learn about Operating System

Objective:
On Successful Completion of this subject the students should have:
- OS Concepts, Process, Files, Dead Lock Etc.,

UNIT I:
History of Operating System - Operating system concepts – Process – Files -System calls

UNIT II:

UNIT III:

UNIT IV:
Memory Management: Swapping - Virtual Memory - Memory Management without Swapping – Segmentation - Using MS DOS - MS DOS shell – MS DOS File System.

UNIT V:
UNIX: UNIX Goals- Interface to Unix-Process in Unix- UNIX files system- Memory Management System Calls in UNIX.

TEXT BOOK:
Andrew S. Tanenbaum - “Modern Operating System” -Eastern Economy Edition –PHI

REFERENCE BOOK:
2. Milan Milenkovic-“Operating System” 2nd edition TMH.
Core 10 : GRAPHICS AND MULTIMEDIA

(GRAPHICS – UNITS I & II)


(MULTIMEDIA – UNITS III, IV &V)


TEXTBOOKS:
1. COMPUTER GRAPHICS – Donald Hearn, M. Pauline Baker, 2nd edition, PHI. (UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)

REFERENCE BOOKS:
1. COMPUTER GRAPHICS – Amarendra N Sinha, Arun D Uday, TMH.
2. MULTIMEDIA: Making it Work – Tay Vaughan, 7th edition, TMH.
CORE LAB 5: MULTIMEDIA LAB

Using suitable Multimedia software/tool (Flash/Photoshop/Macromedia) do the following:

1. Create a Sun Flower.
2. Create Water Drops.
3. Animate Plane Flying in the Clouds.
5. Create Mouse.
6. Create See thru text.
7. Create Military Clothe.
8. Create Stone Texture.
9. Create Rollover Buttons.
12. Convert Black and White to Color Photo.
13. Create Ice Text.
15. Create Fog Effects.
DIPLOMA PAPER 3: NETWORK SECURITY AND MANAGEMENT

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V

Electronic Mail Policy: Electronic Mail – What are the E-mail threats that organization’s face - Why do you need an E-mail Policy - How do you create an E-mail Policy - Publishing the E-mail Policy - University E-mail Policy.


Text Books:

CORE 11: COMPUTER AIDED DESIGN AND MANUFACTURING

UNIT – I:


UNIT – II:


UNIT – III:


UNIT – IV:


UNIT – V:

Production Planning and Control:
Introduction – Traditional Production Planning and Control – Problems with Traditional Production Planning and Control – Computer-Integrated Production Management System – Cost Planning and Control.


Text Books:

CORE 12: WEB TECHNOLOGY

Unit I


Unit II


Unit III


Unit IV


Unit V


Text Books:

CORE LAB 6: WEB TECHNOLOGY

1. Design a personal web page using HTML.
2. Design a data entry form in HTML.
3. Write a Program in ASP to get data using a form, validate the data and returns the same data for correction if any using the same form.
4. Write a program in ASP to display the Session properties.
5. Write a program in ASP that makes use of Ad Rotator component.
6. Write a program in ASP that makes use of Browser Capabilities component.
7. Write a program in ASP that makes use of Content Rotator component.
8. Write a program in ASP that makes use of page counter component.
9. Write a program in ASP to get the data of students using forms and stores them in database.
10. Write a program in ASP to perform record navigation using a form.
DIPLOMA PAPER 4 (LAB): NETWORK SECURITY

1. Write a program to encrypt the data using the encryption methods:
   
   (i) Substitution Ciphers  
   (ii) Transposition Ciphers

2. Write a program to implement DES algorithm.

3. Write a program to implement the Public Key Cryptography using Diffie -Hellman Algorithm.

4. Write a program to implement the Public Key Cryptography using RSA algorithm.

5. Write a program to secure the Database using User Authentication Security.

ELECTIVE I – A : MOBILE COMPUTING

UNIT I


UNIT II
MOBILE COMPUTING THROUGH TELEPHONY – Evolution of telephony – Multiple access procedures – Mobile computing through telephone – Developing an IVR application – Voice XML – Telephony applications programming interface(TAPI)


UNIT III

SHORT MESSAGE SERVICES (SMS) – Mobile computing over SMS – Short Message Services (SMS) – Value added services through SMS – Accessing SMS bearer.

UNIT IV

WIRELESS APPLICATION PROTOCOL (WAP) – WAP – MMS – GPRS applications.

UNIT V


TEXT BOOK:
ELECTIVE I – B : DISTRIBUTED COMPUTING

Subject Description
This Course presents the distributed computing techniques emphasizing the client server model

Goals
To enable the students to learn the concepts of distributed computing

Objectives
On successful completion of the course the students should have:
• Understood the trends and principles of distributed computing

Contents
UNIT I
Distributed Systems: Fully Distributed Processing systems – Networks and interconnection structures – designing a distributed processing system.

UNIT II
Distributed systems: Pros and Cons of distributed processing – Distributed databases – the challenges of distributed data – loading, factors – managing the distributed resources division of responsibilities.

UNIT III
Design considerations: Communication Line loading – line loading calculations- partitioning and allocation - data flow systems – dimensional analysis- network database design considerations- ration analysis- database decision trees- synchronization of network databases

UNIT IV
Client server network model: Concept – file server – printer server and e-mail server

UNIT V
Distributed databases: An overview, distributed databases- principles of distributed databases – levels of transparency- distributed database design- the R* project techniques problem of heterogeneous distributed databases

Reference:
1. John a. Sharp, “An introduction to distributed and parallel processing g” Blackwell Scientific Publication(Unit I & III)
2. Uyless D. Black, “Data communication and distributed networks”(unit II)
3. Joel M.Crichllow “introduction to distributed & parallel computing (Unit IV)
**ELECTIVE I – C : DIGITAL IMAGE PROCESSING**

**UNIT-1 Digital Image Fundamentals**  

**UNIT-2 Image Enhancement**  

**UBIT-3 Image Compression and Segmentation**  

**UNIT-4 Feature Extraction**  
Image feature descriptions-Interpretations of Line drawings, Image pattern recognition algorithms.

**UNIT-5 Knowledge Representation and Use**  
Knowledge Representation and Use-Image analysis using Knowledge about scenes-Image Understanding using two dimensional methods.

**TEXT BOOK:**  

**REFERENCES:**  
**ELECTIVE II –A : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS**

**Subject Description:**
This subject deals with the Artificial Intelligence

**Goal:**
To learn about AI

**Objective:**
On successful completion of this subject the students should have:
- Heuristic, Hill Climbing, Planning, Expert System etc.,

**UNIT I:**

**UNIT II:**

**UNIT III:**

**UNIT IV:**

**UNIT V:**

**TEXT BOOK:**
ELECTIVE II –B : ANIMATION TECHNIQUES

Modified Syllabus for ANIMATION TECHNIQUES Paper

ANIMATION TECHNIQUES PAPER FOR COMPULSORY DIPLOMA IN MULTIMEDIA AND ANIMATION - FOR B.C.A., B.Sc. SOFTWARE SYSTEM & M.Sc. SOFTWARE SYSTEM DEGREE COURSES WITH EFFECT FROM 2007-08 ONWARDS.

CORE PAPER 8-ANIMATION TECHNIQUES FOR B.Sc. MULTIMEDIA AND WEB TECHNOLOGY DEGREE COURSE WITH EFFECT FROM 2008-09 ONWARDS.

ELECTIVE PAPER - ANIMATION TECHNIQUES FOR B.Sc. COMPUTER TECHNOLOGY DEGREE COURSE WITH EFFECT FROM 2008-09 ONWARDS.


TEXT BOOK:

1. PRINCIPLES OF MULTIMEDIA – Ranjan Parekh, 2007, TMH. (Unit I, Unit V)

Text for Unit III, IV & V is appended.
ELECTIVE II –C : E-COMMERCE

Subject Description: This subject deals with E-commerce concepts like E-Commerce, M-Commerce, E-Security and E-payment.

Goal: Knowledge on E-commerce and Real World and Cyberspace problem awareness.

Objective: To inculcate knowledge on E-Commerce concepts in the present IT world.


TEXTBOOK:
1. ELECTRONIC COMMERCE from Vision to Fulfillment – Elias M. Awad, 3rd edition, PHI.
   (Chapters: 1, 6, 11, 13 &15)

REFERENCE BOOKS:
2. INTRODUCTION TO E-COMMERCE – Jeffrey F. Rayport, Bernard J. Jaworski, TMH.
ELECTIVE III-A : DATA MINING

**Subject Description:**
This Subject deals with the Data Mining

**Goal:** To learn about Data Mining

**Objective:**
On Successful Completion of this subject the students should have:
- Matrices, Decision tree, Neural Network, Algorithms etc.,

**UNIT I:**
Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

**UNIT II:**

**UNIT III:**

**UNIT IV:**

**UNIT V:**

**TEXT BOOK:**

**REFERENCE BOOK:**
Jiawei Han & Micheline Kamber – “Data Mining Concepts & Techniques” 2001 Academic Press.
**ELECTIVE III-B : EMBEDDED SYSTEMS**

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<tr>
<td>UNIT V</td>
<td>Inter-process communication and synchronization of processes, tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication. Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling – Performance metric in scheduling</td>
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**Text Book(s)**  
ELECTIVE III-C : SOFTWARE TESTING

Subject Description: This subject deals software testing concepts like unit-wise testing, integration testing and acceptance testing.

Goal: Knowledge on software testing and how to test the software at various levels.

Objective: To inculcate knowledge on Software testing concepts.


TEXTBOOKS:
   (UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6.1-6.7
   UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)

REFERENCE BOOKS:
1. EFFECTIVE METHODS OF SOFTWARE TESTING–William E.Perry, 3rd ed, Wiley India.
2. SOFTWARE TESTING – Renu Rajani, Pradeep Oak, 2007, TMH.
Electives allow you to be picky and select college courses that fulfill a general education requirement, help boost your GPA or interest you “just because.” Or they may give you the opportunity to explore new hobbies and develop desirable career skills and abilities. However, your elective choices can be limited, or even nonexistent, if you don’t have the right degree plan and make the wrong course decisions. It all depends on which credits successfully transfer, your degree requirements and what you ultimately want to do. You can choose these courses from a menu list of possible selections within your degree program. Use this opportunity to explore additional subjects and develop a well-rounded general knowledge of your area of study.