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*Not Considered for Grand Total and CGPA*

# Core Based Electives

One subject to be opted for each Core Based Elective

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<tr>
<th>Semester</th>
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<tr>
<td>I</td>
<td>Microprocessors and Microcontrollers</td>
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<td>I</td>
<td>Embedded Systems</td>
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<td>I</td>
<td>Human Computer Interaction</td>
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<td>II</td>
<td>Wireless and Mobile Communication</td>
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<td>II</td>
<td>Multimedia Systems &amp; Design</td>
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<td>Digital Image Processing</td>
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<td>III</td>
<td>Soft Computing</td>
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<td>III</td>
<td>Ontology and Semantic Web</td>
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Objectives
To provide the knowledge of recurrence relations, formal languages, mathematical logic, coding theory and numerical methods.

UNIT I

UNIT II

UNIT III

UNIT IV
Coding Theory – Introduction – Cryptography – Caesar Cipher Coding – Matrix Encoding – Scrambled Codes – Hamming Metric – Hamming Distance – Error Detecting Capability of an Encoding

UNIT V

Text Books
   UNIT I : Chapter 10 (Except 10.9 and 10.10)   UNIT III : Chapter 2
   UNIT II: Chapter
   UNIT III : Chapter 5
   UNIT IV : Chapter 9 (9.1 – 9.5)
UNIT V : Chapter 2 (2.8), Chapter 5 (5.8)

Core II : OOAD and UML

Subject Code : 14PCS1C2  Max. Marks : 100
Hours : 6  Internal Marks : 40
Credits : 5  External Marks: 60

Objectives
To impart the concepts of Object oriented methodologies and Unified Modeling Language.

UNIT I
18 Hrs

UNIT II
18 Hrs

UNIT III
18 Hrs

UNIT IV
18 Hrs

UNIT V
18 Hrs

Text Books:
   UNITS III, IV & V: Chapters: 1, 2 and 4, 5-20, 25, 26, 28, 30-32.

Reference Books:
Core III : Advanced Java Programming

Subject Code : 14PCS1C3                          Max. Marks : 100
Hours : 6                Internal Marks :   40
Credits : 5                External Marks:   60

Objectives
To Impart sound knowledge in Object Oriented Programming skills in JAVA

UNIT I  18Hrs

UNIT II  18Hrs

UNIT III  18Hrs

UNIT IV  18Hrs

UNIT V  18Hrs
Swing Component classes- JApplet- Text Fields, Buttons, Combo boxes, Tabbed and Scroll Panes- The Life Cycle of a Servlet- GenericServlet class,HttpServlet class- Reading Servlet Parameters-Handling HTTP Request and Responses.

Text Book

Reference Book
1. Herbert Schildt with Joe O’ Neil, Java – Programmer’s Reference, TMH.
1. Program for multiplying two matrices.

2. Program for finding area and circumference of a circle using class and object.

3. Define a class Stack and implement the PUSH and POP operations and enhance the Stack class by automatically extending the size when the stack pointer reaches the Maximum value.

4. Define an interface named as Area and three implementing classes namely Circle, Rectangle and Triangle. Display the area of the circle, area of the Rectangle and area of the Triangle by invoking interface reference.

5. Program to prepare an EB-Bill using the package concept.

6. Program to handle the following Exceptions
   i) DivideByZeroException
   ii) ArrayIndexOutOfBoundsException
   iii) NumberFormatException
   iv) NullPointerException and
   v) User defined exceptions

7. Program for arranging the given names in alphabetical order and display the number of names in palindrome.

8. Menu driven program using Vector utility class

9. Program for handling multiple threads.

10. Program for displaying contents of a given file, copying contents between files and updating an existing file.

11. Program using ServerSocket and Socket classes.

12. Program using DatagramSocket and DatagramPacket classes

13. Applet programs for displaying geometrical object on a window and passing parameters to an applet


15. Simple Servlet program to display the factorial of a given number using HttpServlet class.
Assembly Language Program (using MASM):

1. 8-Bit Addition, Subtraction, Multiplication, Division
2. 16-Bit Addition, Subtraction, Multiplication, Division
3. Multibyte Addition, Subtraction
4. Summing the series of numbers in an array
5. Finding Biggest/Smallest number in an array of numbers
6. Block of data transfer
7. 1’s complement of 8-bit number, 1’s complement of 16-bit number,
   2’s complement of 8-bit number, 2’s complement of 16-bit number
8. Shifting 8-bit number towards right, Shifting 8-bit number towards left,
   Shifting 16-bit number towards right, Shifting 16-bit number towards left
9. Masking least significant 4-bits of 8-bit number,
   Masking most significant 4-bits of 8-bit number
   Masking LSB of 16-bit number
   Masking MSB of 16-bit number
10. BCD to ASCII Conversion, ASCII to BCD Conversion
11. Packed BCD to Unpacked BCD Conversion, Unpacked BCD to Packed BCD Conversion
12. Comparison of two strings
13. Finding the length of the string
14. Finding number of occurrences of a character in a string
15. Sorting the array of elements in ascending/descending order
Core Based Elective – I: Microprocessors and Microcontrollers

Subject Code: 14PCS1CE1
Max. Marks: 100
Hours: 6
Internal Marks: 40
Credits: 5
External Marks: 60

Objectives
To realize the 8086 Microprocessor Architecture, Operations, Programming, and to understand the concepts of Embedded Systems and 8051 Microcontroller.

UNIT I 18 Hrs

UNIT II 18 Hrs

UNIT III 18 Hrs
8086 Assembly Language Programming: Addition, Subtraction, Multiplication and Division – Multi-byte Addition and Subtraction – Complements – Shifting – Masking – Sum of a Series – Block of Data Transfer – Finding the Smallest and the Biggest Number in an Array – Arranging a Series of Numbers in Ascending and Descending Order – Length of a String – Number of Occurrences of a Character in a String – Comparison of Two Strings

UNIT IV 18 Hrs
Introduction to Embedded Systems: An Embedded System – Processor in a System – Other Hardware Units – Software Embedded into a System – Exemplary Embedded Systems – Embedded System-On-Chip (SOC) and in VLSI Circuit

UNIT V 18 Hrs

Text Books
Subject Code: 14PCS2C5  
Max. Marks: 100

Hours: 6  
Internal Marks: 40

Credits: 5  
External Marks: 60

Objectives:
To study the concepts of algorithms and analysis of algorithms using divide and conquer, greedy method, dynamic programming, backtracking, and branch and bound techniques.

UNIT I  
18 Hrs

UNIT II  
18 Hrs

UNIT III  
18 Hrs

UNIT-IV  
18 Hrs
Basic Traversal and Search Techniques: Techniques for Binary Trees – Techniques for Graphs – Connected Components and Spanning Trees – Biconnected Components and DFS.

UNIT-V  
18 Hrs
Backtracking: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem
Branch and Bound: The Method - 0/1 Knapsack Problem.

Text Book
Core VI : Advanced Computer Architecture

Subject Code : 14PCS2C6                          Max. Marks : 100
Hours       : 6                Internal Marks : 40
Credits      : 5                External Marks: 60

Objectives:
To study the advanced computer Architecture, theories of parallel computing, network properties and applications of cost effective computer systems to meet the above requirements.

UNIT I                  18 Hrs
Parallel computer models :- The state of computing - Multiprocessors and multicomputers – Multivector and SIMD computers.

UNIT II                 18 Hrs
Program and Network properties:- Conditions of parallelism – Program partitioning and scheduling – program flow mechanisms – system interconnect architectures.

UNIT III                18 Hrs
Processors and memory hierarchy :- Advanced processor Technology – Super scalar and vector processors – Linear Pipeline Processors – Nonlinear pipeline Processors.

UNIT IV                 18 Hrs

UNIT V                  18 Hrs
Software for Parallel Programming:- Parallel Programming Models – Parallel Languages and Compilers – Dependence Analysis of Data Arrays.

Text Book

Reference Books:

Core VII : C# and .Net Framework

Subject Code : 14PCS2C7
Max. Marks : 100
Hours : 6
Internal Marks : 40
Credits : 5
External Marks: 60

Objectives:
To impart the basic fundamental knowledge of C# and .NET framework

UNIT I
18 Hrs

UNIT II
18 Hrs

UNIT – III
18 Hrs

UNIT IV
18 Hrs
The IDE main window – Class view window – object browser – code window – compiling the code – code debugging – developing a simple vb.net console application – developing a simple vb.net project – Text box – Label – Button – RadioButton – CheckBox – GroupBox – ListBox – CheckedListBox – ComboBox.

UNIT V
18 Hrs

Text Books:
   UNIT I: Chapters 1, 2, 4
   UNIT II: Chapters 5, 6, 7, 8, 9
   UNIT III: Chapters 16, 17, 18
   UNIT IV: Chapters 2, 3, 4
   UNIT V: Chapters 15, 16, 17

Reference Books:
1. Write a C# program to read two integer values using the methods `Console.ReadLine()` and `int.Parse()` and then display their
   - Sum
   - Difference
   - Product
   - Integer Division
   - Modulus Division

2. Write a C# program to convert the given temperature in fahrenheit to celcius and display the values in a tabular form.

3. Programs in C# using if statement, if..else statement, nested if..else statement

4. Programs in C# using if else ladder and switch statement

5. Write a C# program to print the multiplication table using do..while loop

6. Programs in C# using pass by value and pass by reference methods.

7. Write a C# program that uses a method to sort an array of integers.

8. Write a C# program to sort a list of numbers using arrays.

9. Write a C# program to create and implement a delegate.

10. Write a C# program to create and implement an event handler.

11. Write a C# program using try and catch for exception handling

12. Write a C# program to implement nested try blocks.

13. Setting up and using Adrotator control

14. Making use of list box, check box and radio button controls.

15. Making use required field validator and compare validator controls.

Core Based Elective – II : Wireless and Mobile Communication

Subject Code : 14PCS2CE2                          Max. Marks : 100
Hours      : 6                                      Internal Marks : 40
Credits     : 5                                      External Marks: 60

Objectives:
To impart the basic knowledge of wireless and mobile communication.

UNIT I            18 Hrs

UNIT II           18 Hrs

UNIT III          18 Hrs

UNIT IV           18 Hrs

UNIT V            18 Hrs

Text Book:
Core IX : Distributed Operating Systems

Objectives
To provide fundamentals of distributed operating systems and insight study of DOS features such as message passing, distributed shared memory, synchronizations, distributed file systems and the case study of Windows Vista

UNIT I 18 Hrs

UNIT II 18 Hrs

UNIT III 18 Hrs

UNIT IV 18 Hrs

UNIT V 18 Hrs

Text Book
   UNIT I : Chapter 1 (1.1, 1.3, 1.5, 1.6, 1.7) & Chapter 2
   UNIT II : Chapter 3
   UNIT III : Chapter 5 & 6
   UNIT IV : Chapter 9
   UNIT V : Chapter 11
Core X : Data Warehousing and Data Mining

Subject Code : 14PCS3C10                      Max. Marks : 100
Hours  : 6                                    Internal Marks : 40
Credits  : 5                                   External Marks: 60

Objectives
To understand the practical methods and techniques for building a data warehouse. To understand data mining concepts, tasks and their techniques.

UNIT I 18 Hrs

UNIT II 18 Hrs

UNIT III 18 Hrs

UNIT IV 18 Hrs

UNIT V 18 Hrs

Text Books
   UNIT I: Chapters I & II    UNIT II: Chapter III
   UNIT III: Chapters III & IV   UNIT IV: Chapters V & VI   UNIT V: Chapters VIII & IX
Core XI : Principles of Compiler Design

Subject Code : 14PCS3C11 | Max. Marks : 100
Hours : 6 | Internal Marks : 40
Credits : 5 | External Marks: 60

Objectives
To understand the various phases of a compiler and to develop skills in designing a compiler.

UNIT I 18 Hrs
Compiler - Phases of Compiler – Compiler writing tools – Lexical Analysis – Role of Lexical analyzer – Finite Automata – Regular Expression – From a Regular expression to an NFA, NFA to DFA – Design of Lexical Analyzer.

UNIT II 18 Hrs

UNIT III 18 Hrs

UNIT IV 18 Hrs
Symbol Table – Contents of Symbol Table – Data Structures for Symbol Table – Runtime Storage Administration – Implementation of Stack Allocation Scheme Block Structured Languages – Storage Allocation in Fortran.

UNIT V 18 Hrs

Text Books
   Chapter 1 : (1.1,1.3), Chapter 3: (3.1,3.6,3.7,3.9), Chapter 4: (4.1,4.2,4.4 – 4.6),
   Chapter 5: (5.1,5.2), Chapter 7: (7.5), Chapter 8: (8.1,8.4)
   Chapter 9: (9.1,9.2), Chapter 10: (10.1,10.2,10.3),
   Chapter 12: (12.1,12.2,12.3), Chapter 15: (15.2,15.4,15.5,15.7)
Core XII(a) : Open Source Technology

Subject Code : 14PCS3C12                          Max. Marks : 50
Hours        : 3                Internal Marks : 20
Credits       : 3                External Marks: 30

Objectives
To understand the concepts of Linux, Apache, MySQL and PHP

UNIT I  9 Hrs

UNIT II  9 Hrs

UNIT III  9 Hrs

UNIT IV  9 Hrs
Introduction to MY SQL: The Show Databases and Create Database – The USE command – Create Tables and Show Table – Describe Table – Insert, Select, Update, and Delete statement – – Table Joins – Loading and Dumping a Database.

UNIT V  9 Hrs

Text Book
1. James Lee and Brent Ware, Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, Dorling Kindersley(India) Pvt. Ltd., 2008.
UNIT I: Chapter 1, 2
UNIT II: Chapter 2
UNIT III: Chapter 3
UNIT IV: Chapter 5
UNIT V: Chapter 12

Reference Book
1. Write a shell program to find the details of a user session.

2. Write a shell program to change the extension of a given file.

3. Create a mysql table and execute queries to read, add, remove and modify a record from that table.

4. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.

5. Write a PHP program that adds products that are selected from a web page to a shopping cart.

6. Write a PHP program to access the data stored in a mysql table.

7. Write a PHP program interface to create a database and to insert a table into it.

8. Write a PHP program using classes to create a table.

9. Write a PHP program to upload a file to the server.

10. Write a PHP program to create a directory, and to read contents from the directory.
Core Based Elective - III : Grid Computing

Subject Code : 14PCS3CE3                          Max. Marks : 100
Hours        : 6                Internal Marks :   40
Credits       : 5                External Marks:   60

Objectives:
To introduce the basic concept of Grid computing. To provide the overall knowledge of Grid computing.

UNIT I                       18 Hrs

UNIT II                      18 Hrs

UNIT III                     18 Hrs

UNIT IV                      18 Hrs

UNIT V                       18 Hrs

Text Book
   UNIT – I: Chapters 1,2
   UNIT – II: Chapters 3,4
   UNIT – III: Chapters 5,6
   UNIT – IV: Chapters 7,9
   UNIT – V: Chapters 10,11

Reference Book
Extra Credit – 1: Cloud Computing

Objective:
To study the concepts and methods of cloud computing using security, and disaster recovery techniques.

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Textbook

Reference Book
Objectives:
To understand the concepts of middleware technologies

UNIT- I 18 Hrs

UNIT- II 18 Hrs

UNIT- III 18 Hrs

UNIT- IV 18 Hrs

UNIT- V 18 Hrs

Text Books
1. a) Develop a server side application to display a welcome message on the browser by using servlets.
   b) Develop an JSP application for user authentication.

2. Develop a simple RMI application for
   a) Downloading and uploading files on the server by using multiple clients.
   b) Display the Factorial of the given number.

3. Develop a simple J2EE application for
   a) To display the student information system using stateful session beans.
   b) To display the database record contents by using CMB entity beans.

4. Design a web page that makes uses of Ad Rotator Control

5. Design a web page involving Multi View or Wizard Control.

6. Create a table and insert a few records using Disconnected Access.

7. Develop a project to update and delete few records using Disconnected Access.

8. Develop a project to view the records using GridView, DetailsView, FormView Controls.

9. Data view with the help of grid view control.

10. Designing a ASP.Net client for web service.
Objectives:
This course provides an insight to network concepts, technologies. At the end of the course the students will have a bird’s eye view of how network is implemented in the real world.

UNIT-I

UNIT-II

UNIT-III

UNIT-IV
ISDN – Cable Modem – DSL – Frame Relay – Fast Ethernet – Gigabit Ethernet – ATM – SONET

UNIT-V
Software Architecture – Serial Port and Parallel Port programming – NetBIOS, TCP/IP and Socket Programming - Winsock and RPC Programming

Text Books:
2. Youlu Zheng, Shakil Akhtar, “Networks for Computer Scientists and Engineers”, Oxford University Press,2002  (Unit-III,IV&V – Chapter 4(except 4.3), 5,6(except 6.4 & 6.7),11)

Reference Book
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Students carry out a project in software development companies