**DHANALAKSHMI SRINIVASAN**
**COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS)**
**Affiliated to Bharathidasan University, Tiruchirappalli**
**(Nationally Re-Accredited with A++ Grade by NAAC)**
**Perambalur – 621212.**

**BACHELOR OF COMPUTER APPLICATIONS**

**Choice Based Credit System-Learning Outcomes Based Curriculum Framework (CBCS-LOCF)**
**(Applicable to the candidates admitted from the academic year 2024-25 onwards)**

**Programme Pattern**

| Sem | Part | Course | Course Title | Course Code | Ins.Hrs | Credit | Exam Hours | Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Internal | External | |
| I | I | Language Course - I | Cheyul(Ikkala Ilakkiyam)Sirukathai, Ilakkiya Varalaru | 24U1LT1 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Hindi | 24U1LH1 | | | | | | |
| | | | French | 24U1LF1 | | | | | | |
| | II | English Course-I | English for Communication - I | 24U1EL1 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course-I | Problem solving using C | 24UCA1C1 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core Course-II Practical | C Lab | 24UCA1C2P | 4 | 3 | 3 | 40 | 60 | 100 |
| | III | Allied Course -I | Algebra and Calculus | 24UCA1A1 | 4 | 4 | 3 | 25 | 75 | 100 |
| | III | Allied Course-II | Numerical Methods and Statistics | 24UCA1A2 | 3 | - | | - | - | - |
| | IV | Value Education | Value Education | 24U1VED | 2 | 2 | 3 | 25 | 75 | 100 |
| | **Total** | | | | **30** | **20** | | - | - | **600** |
| II | I | Language Course - II | Cheyul(Pakthi Ilakkiyam,Sitrilakkiyam ) Puthinam | 24U2LT2 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Hindi | 24U2LH2 | | | | | | |
| | | | French | 24U2LF2 | | | | | | |
| | II | English Course-II | English for Communication - II | 24U2EL2 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course- III | Relational Database Management Systems | 24UCA2C3 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core Course-IV Practical | Relational Database Management Systems Lab | 24UCA2C4P | 4 | 3 | 3 | 40 | 60 | 100 |
| | III | Allied Course -II | Numerical Methods and Statistics | 24UCA1A2 | 4 | 4 | 3 | 25 | 75 | 100 |
| | III | Allied Course-III | Operations Research | 24UCA2A3 | 3 | 3 | 3 | 40 | 60 | 100 |
| | IV | Environmental Studies | Environmental Studies | 24U2EVS | 2 | 2 | 3 | 25 | 75 | 100 |
| | **Total** | | | | **30** | **23** | | - | - | **700** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **III** | I | Language Course - III | Cheyul(kappiyangal) Urainadai | 24U3LT3 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Hindi | 24U3LH3 | | | | | | |
| | | | French | 24U3LF3 | | | | | | |
| | II | English Course-III | English for Communication - III | 24U3EL3 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course-V | Java Programming | 24UCA3C5 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core Course-VI Practical | Java Programming Lab | 24UCA3C6P | 4 | 3 | 3 | 40 | 60 | 100 |
| | III | Allied Course -IV | Financial Accounting | 24UCA3A4 | 4 | 4 | 3 | 25 | 75 | 100 |
| | III | Allied Course -V Practical | Accounting Package Lab | 24UCA3A5P | 3 | - | | - | - | - |
| | IV | Non Major Elective-I | Basic of Computer Programming | 24UCA3N1A | 2 | 2 | 3 | 25 | 75 | 100 |
| | | | Working Principles of Internet | 24UCA3N1B | | | | | | |
| | | | Fundamentals of Information Technology | 24UCA3N1C | | | | | | |
| | **Total** | | | | **30** | **20** | | - | - | **600** |
| **IV** | I | Language Course - IV | Palanthamil Cheyulum Nadakamum | 24U4LT4 | 6 | 3 | 3 | 25 | 75 | 100 |
| | | | Hindi | 24U4LH4 | | | | | | |
| | | | French | 24U4LF4 | | | | | | |
| | II | English Course-IV | English for Communication - IV | 24U4EL4 | 6 | 3 | 3 | 25 | 75 | 100 |
| | III | Core Course-VII | Python Application Programming | 24UCA4C7 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core Course-VIII Practical | Python Lab | 24UCA4C8P | 4 | 3 | 3 | 40 | 60 | 100 |
| | III | Allied Course -V | Accounting Package Lab | 24UCA3A5P | 4 | 4 | 3 | 40 | 60 | 100 |
| | III | Allied Course-VI | Accounting Package | 24UCA4A6 | 3 | 3 | | 40 | 60 | 100 |
| | IV | Non Major Elective-II | Scripting Languages | 24UCA4N2A | 2 | 2 | 3 | 25 | 75 | 100 |
| | | | Office Automation | 24UCA4N2B | | | | | | |
| | | | PC Hardware and Trouble Shooting | 24UCA4N2C | | | | | | |
| | **Total** | | | | **30** | **23** | | - | - | **700** |
| **V** | III | Core course-IX | Cyber Security | 24UCA5C9 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core course-X | Internet of Things | 24UCA5C10 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core course-XI | Software Engineering | 24UCA5C11 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core course-XII Practical | Cyber Security Lab | 24UCA5C12P | 6 | 3 | 3 | 40 | 60 | 100 |
| | III | Major Based Elective-I | E-Commerce and M-Commerce | 24UCA5MBE1A | 4 | 4 | 3 | 25 | 75 | 100 |
| | | | System Analysis and Design | 24UCA5MBE1B | | | | | | |
| | | | Client Server Technology | 24UCA5MBE1C | | | | | | |
| | III | Internship /Field Study / Industrial Visit | | 24UCA51S1 | - | 1 | | | | 100* |
| | IV | Skill Based Elective-I | Page Maker | 24UCA5SBE1A | 3 | 2 | 3 | 25 | 75 | 100 |
| | | | Corel Draw | 24UCA5SBE1B | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Internet Programming | 24UCA5SBE1C | | | | | | |
| | IV | Soft Skills | Soft Skills Development | 24U5SS | 2 | 2 | 3 | 25 | 75 | 100 |
| | | Self Paced Learning - I (Online course) | | | - | 2* | | | | |
| | **Total** | | | | **30** | **27** | | **-** | **-** | **700** |
| **VI** | III | Core course-XIII | Fundamentals of React JS | 24UCA6C13 | 6 | 6 | 3 | 25 | 75 | 100 |
| | III | Core course-XIV | Front End Technologies | 24UCA6C14 | 5 | 5 | 3 | 25 | 75 | 100 |
| | III | Core Course-XV Practical | React JS -Lab | 24UCA6C15P | 6 | 3 | 3 | 40 | 60 | 100 |
| | III | Major Based Elective-II | Web Component Development with J2EE | 24UCA6MBE2A | 4 | 4 | 3 | 25 | 75 | 100 |
| | | | GIS and Remote Sensing | 24UCA6MBE2B | | | | | | |
| | | | Machine Learning | 24UCA6MBE2C | | | | | | |
| | III | Project work | Project work | 24UCA6PW | 5 | 5 | 3 | 40 | 60 | 100 |
| | IV | Skill Based Elective-II | Dearmweaver | 24UCA6SBE2A | 3 | 2 | 3 | 25 | 75 | 100 |
| | | | XML Programming | 24UCA6SBE2B | | | | | | |
| | | | Digital Marketing | 24UCA6SBE2C | | | | | | |
| | IV | Gender studies | Gender Studies | 24U6GS | 1 | 1 | 3 | 25 | 75 | 100 |
| | | Self Paced Learning - II (Online course) | | | - | 2* | | | | |
| | **Total** | | | | **30** | **26** | | **-** | **-** | **700** |
| **I-VI** | V | Extension Activities | | | - | 1 | | - | - | - |
| **Total(Three years)** | | | | | | **140 (4*)** | | | | **4000** |

1 University Representative: Dr.Lakshmi Prabha
2 Subject Expert: Dr.R.Mohan
Industry
CorporateSector/Allied
3 Area Representative: Mr.M.Manoharan
Principal's Nominee from
4 Alumnae: Ms.K.Lavanya
5 Chair Person: Mrs.S.Gowri

Members:

1 Mrs.K.Suriya
2 Mrs.M.Shiyamala
3 Dr.P.Kavitha
4 Mrs.S.Dhara
5 Mrs.S.Durgadevi
6 Mrs.J.Preethi

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| I | 24UCA1C1 | CC-I: PROBLEM SOLVING USING C | 5 | 5 |

**Objective:** To impart basic knowledge of Programming Skills in C language.

**Unit- I** **(15 Periods)**

Computer Basics: Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem Solving Using Computers. Data Representation: Representation of Characters in Computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error Detecting Codes. Input / Output Units: Description of Computer Input Units, Other Input Methods, Computer Output Units.

**Unit- II** **(15 Periods)**

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to Construct memories, Magnetic Hard Disk, Floppy Disk Drives, Compact Disk Read Only Memory (CDROM), Algorithms-Characteristics of Algorithms- Examples of Algorithms- Advantages and Disadvantages of Algorithms- Flow Charts – Symbols used in Flow Charts.

**Unit- III** **(20 Periods)**

**Introduction to C : -**History of C- Structure of a C program- Simple C program- Executing a C Program- Character set in C- C Tokens- Keywords and Identifiers in C- Constants- Variables in C-, Basic Data Types- Type declaration- Operators and Expressions.

**Unit IV** **(20 Periods)**

**Arrays and String Handling :-** Managing Input and output operation- Control statements- Introduction to array- advantages of arrays- array declaration- array initialization- Types of arrays - Single and Multidimensional arrays, Character Arrays - Strings.

**Unit -V** **(20 Periods)**

**Functions:-** Introduction to functions - Advantages of functions- Declaring a function- calling a function- Passing arguments for a function- Categories of functions - Nesting of functions- Recursion - Structures and Union- Introduction to Pointers- Pointers and Arrays- Function Returning Pointers- Pointers to functions.

**Text Book(s):**

1. E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, New Delhi Seventh Edition, 2016.

2. Szuhay, Jeff and Szuhay, Jeff, "Learn C Programming : A Beginner's Guide to learning C Programming the Easy and Disciplined way", Packt Publishing, 2020.

3. Jena, Sisir Kumar and . Jena, Sisir Kumar, "C Programming : Learn to Code", CRC Press,2021.

**Reference Book(s):**

1. YashwantP.Kanetkar (2010),Let us C, BPB Publications, Sixth Edition.

2. ReemaThareja(2014),Fundamentals of Computers, Oxford University Press.

**Course Outcomes:**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| CO1 | Understanding the basic concepts of computer characteristic and Representation of computer units | K2 |
| CO2 | Concepts of Memory management Technique and Algorithm | K3 |
| CO3 | Remember the program of C with its syntax and semantic | K3 |
| CO4 | Selection statement, Work with Looping and jump statements, do programs on Loops and jump statements | K4 |
| CO5 | Understand the programming principles in C (functions, structures, pointers and files) | K4 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | 24UCA1C1 | | CC-I: PROBLEM SOLVING USING C | | | | | | | 5 | 5 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| CO-2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| CO-3 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| CO-4 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2.4 |
| Mean overall score | | | | | | | | | | | 2.2 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| I | 24UCA1C2P | CC-II PRACTICAL: C LAB | 4 | 3 |

**Objective :**To Impart Practical Training in C Programming Language

1. Write a Program to convert temperature from degree Centigrade to Fahrenheit . **(4 Periods)**
2. Write a Program to find whether given number is Even or Odd **( 4 Periods)**
3. Write a Program to find greatest of Three numbers. **(4 Periods)**
4. Write a Program to using switch statement to display Monday to Sunday **(3 Periods)**
5. Write a Program to display first Ten Natural Numbers and their sum **(3 Periods)**
6. Write a Program to find Multiplication of Two Matrices. **(3 Periods)**
7. Write a Program to find the maximum number in Array using pointer. **(4 Periods)**
8. Write a Program to reverse a number using pointer. **(4 Periods)**
9. Write a Program to solve Quadratic Equation using functions **(4 Periods)**
10. Write a Program to find factorial of a number using Recursion. **(4 Periods)**
11. Write a Program to show Call by Value and Call by Reference. **(4 Periods)**

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Remember the program structure of C with its syntax and semantics | **K1** |
| **CO2** | To identify the data types and use them in simple data processing application | **K2** |
| **CO3** | Understand the programming principles in C (operators, branching and looping, arrays, functions, structures) | **K3** |
| **CO4** | Analyse the programming principles learnt in real-time Problems | **K4** |
| **CO5** | To analyses and relate the concept of pointers and their usage | **K5** |

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | 24UCA1C2P | | CC-II PRACTICAL: C LAB | | | | | | | 4 | 3 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2.4 |
| CO-2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2.4 |
| CO-3 | 3 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2.3 |
| CO-4 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 2 | 2 | 2.1 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2.4 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| I | 24UCA1A1 | ALGEBRA AND CALCULUS | 5 | 4 |

**Objective:**

To learn the basic concepts in the integration

**UNIT I** **(12 Periods)**

Theory of Equations: Relation between roots & coefficients – Transformations of Equations – Diminishing, Increasing & multiplying the roots by a constant- Forming equations with the given roots

**UNIT II** **(12 Periods)**

Matrices: Singular matrices – Inverse of a non-singular matrix using adjoint method - Rank of a Matrix – Characteristic equation, Eigenvalues, and Eigen vectors – Cayley Hamilton's Theorem (proof not needed) – problems.

**UNIT III** **(12 Periods)**

Differential Equations: Linear equations – Second order of types $(a D^2 + b D + c)$ $y = F(x)$ where a, b, c are constants and F (x) is one of the following types

(i) $e^{Kx}$ (ii) $sin(kx)$ or $cos(kx)$ (iii) $x^n$ , n being an integer (iv) $e^{Kx} f(x)$ (v) $x^n sinax$ or $x^n cosax$

**UNIT IV** **(12 Periods)**

Integration: Evaluation of integrals of types

Evaluation using Integration by parts – Properties of definite integrals

**UNIT V** **(12 Periods)**

Reduction Formulae

$\int x^n e^{ax} dx$, n is a positive $\int \sin^n x\, dx$ $\int \cos^n x\, dx$ $\int \sin^m x \cos^n x\, dx$, m, n being positive integer.

**TEXT BOOK(S)**

1. A. Singaravelu, Allied Mathematics Edition 2007, Meenakshi Agency

UNIT I - Chapter 3
UNIT II - Chapter 2
UNIT III - Chapter 8
UNIT IV - Chapter 7
UNIT V - Chapter 12

**BOOKS FOR REFERENCE**


1. T.K. Manickavasagam Pillai& others, "Algebra, Volume I", S.V Publication, 1985Revised Edition

2. S.Narayanan,T.K. Manicavachagam Pillai, "Calculus", I,S.Viswanathan Pvt Limited, 2003.


**Course Outcomes:**

| CO No. | CO-STATEMENTS | Cognitive Levels (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO 1** | Understand the importance of roots of real and complex polynomials and learn various methods of obtaining roots | **K1** |
| **CO 2** | Solve systems of linear equations by use of the matrix | **K2** |
| **CO 3** | Discuss and demonstrate the Linear Equations with constant coefficients, Complementary function and Particular integrals. | **K3** |
| **CO 4** | Solving technique of integrals. | **K3** |
| **CO 5** | Define and illustrate the concept of the Reduction formula. | **K4** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | 24UCA1A1 | | ALGEBRA AND CALCULUS | | | | | | | 5 | 4 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| CO-2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| CO-3 | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| CO-4 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| CO-5 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.2 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| II | 24UCA2C3 | CC-III : RELATIONAL DATABASE MANAGEMENT SYSTEMS | 5 | 5 |

**Objective:** Understand the relational database design principles , To develop conceptual understanding of database management system

**UNIT I:** **(20 Periods)**

**IntroductiontoDatabaseSystems:**DatabaseSystemApplicationsPurposeofDatabaseSystem.VIEWOFDATA:Data Abstraction -Instances and Schemas- Data Models- Relational Database- Data base Design-The Entity Relationship model

**UNIT II:** **(20 Periods)**

**Storage and file Structure :**Overview of physical storage media - Magnetic Disks - Tertiary Storage - Storage Access. File Organization: Fixed Length Records - Variable Length Records. Organization of Records in Files: Sequential File Organization - Multi table Clustering File Organization - Data Dictionary Storage.

**UNIT III:** **(20 Periods)**

**Relational Model :**Structure of Relational Data bases - Fundamental Relational Algebra Operation. TRANSACTIONS: Transaction Concept - Transaction State - Implementation of Atomicity and Durability - Concurrent Execution-Serializability.

**UNIT IV:** **(15 Periods)**

**SQL :**SQL: Background - Data Definition - Basic Structure of SQL Queries - Set Operations -Aggregate Functions - Nested sub queries - Views - Joined Relations. Relational Data base Design: Atomic Domain and First Normal Forms. Decomposition Using Functional Dependencies: Keys and Functional Dependencies- Third Normal Form - Boyce Code Normal Form.

**UNIT V:** **(15 Periods)**

**Introduction to PL/SQL :**Introduction of PL/SQL: Advantages of PL/SQL - The Generic PL/ SQL Block. PL/SQL: Data types - Variables - Constants - Control Structures - Cursors - Exception Handling -Procedures and Functions- Packages - Triggers.

**TEXT BOOKS:**

1. Abraham, S., Henry, F.K., & Sudarshan, S. (2016). Database System Concepts (8th Ed.). Tata McGraw-Hill.

**Unit I:** Chapter 1, Chapter 2
**Unit II:** Chapter 3, Chapter 5, Chapter 6
**Unit III:** Chapter 8, Chapter 9, Chapter 10
**Unit IV:** Chapter 12, Chapter 13

2. Ivan, B. (2016). SQL & PL/SQL: The Programming Languages of Oracle. (4th Ed.). BPB Publications. **Unit V:** Chapter 2, Chapter 3

**REFERENCE BOOKS**

1. Gill, P.S. (2019). Database Management Systems. Dream Tech Press.
2. Deshpande, P.S. (2017). SQL & PL/SQL for Oracle 10g. Dream Tech Press.
3. Ramez, E. & Navathe, S.B. (2017). Fundamentals of Database Systems, (7th Ed.). Pearson.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Choose the need, role, importance and uses of databases in application development. | **K1** |
| **CO2** | Contrast the data base approach over the file based data storage system. | **K2** |
| **CO3** | Apply the different models of file organizing, storing and using of data in software solutions. | **K3** |
| **CO4** | Analyze the relational model and relational algebra operations. | **K4** |
| **CO5** | Examine the PL/SQL procedural techniques on relational tables as per the Industrial requirements. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| II | 24UCA2C3 | CC-III : RELATIONAL DATABASE MANAGEMENT SYSTEMS | | | | | 5 | 5 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.3 |
| CO-2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2.5 |
| CO-3 | 3 | 3 | 1 | 2 | 3 | 1 | 3 | 3 | 2 | 3 | 2.4 |
| CO-4 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| II | 24UCA2C4P | CC-IV PRACTICAL: RELATIONAL DATABASE MANAGEMENT SYSTEMS -LAB | 4 | 3 |

**Objective :** To practice the concepts learnt in the subject DBMS by developing a database, To practice the designing, developing and querying a database .

**Exercises**

1. DDL, DML and DCL Queries **(5 Periods)**

2. Aggregate Functions and Set Operations **(4 Periods)**

3. Normalization **(5 Periods)**

4. Joins and Views **(5 Periods)**

5. Nested Sub Queries and Correlated Sub Queries **(5 Periods)**

**PL/SQL**

6. Cursor **(4 Periods)**

7. Procedures and Functions **(5 Periods)**

8. Packages **(4 Periods)**

9. Triggers **(4 Periods)**

10. Exception Handling **(4 Periods)**

**Course Outcomes**

| CO NO | CO-STATEMENTS | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | List the queries of data base using DML/DDL commands. | **K1** |
| **CO2** | Demonstrate the aggregate function and set operations. | **K2** |
| **CO3** | Apply the normalization rules for database design in business solutions. | **K3** |
| **CO4** | Examine the effectiveness of various subqueries for a given problem | **K4** |
| **CO5** | Analyze various PL/SQL stored procedures, stored functions, cursors and packages to provide effective data base solutions | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| II | 24UCA2C4P | CC-IV PRACTICAL: RELATIONAL DATABASE MANAGEMENT SYSTEMS -LAB | | | | | 4 | 3 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.3 |
| CO-2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2.5 |
| CO-4 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 3 | 3 | 3 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| I & II | 24UCA1A2 | NUMERICAL METHODS AND STATISTICS | 6 | 2 |

**Objective:**

To train the students in the numerical problems

**UNIT I** **(12 Periods)**

Algebraic & Transcendental equations: Bisection Method, Iteration method, Newton Raphson Method, - Finite differences –Forward, Backward differences –Newton's forward & backward difference interpolation formulae.

**UNIT II** **(12 Periods)**

Numerical differentiation -Cubic Spline method- Numerical Integration using Trapezoidal rule and Simpson's 1/3rd& 3/8th rules (proof not needed) – Numerical solution of ODE: Solution by Taylor Series Method, Euler's Method, Runge - Kutta $2^{nd}$and $4^{th}$ order method.

**UNIT III** **(12 Periods)**

Gaussian Elimination Method – Jacobi & Gauss Seidel iterative methods – Theory and problems

**UNIT IV** **(12 Periods)**

Arithmetic Mean - Median, Mode, Geometric mean, Harmonic mean, Range, Quartile Deviation, Standard Deviation, Coefficient of variance.

**UNIT V** **(12 Periods)**

Correlation: Meaning of Correlation, Limits for Correlation Coefficient - Types of Correlation, Coefficient of correlation – Karl's Pearson & Spearman's Rank Correlation.

**TEXT BOOK(S)**


1. S.S. Sastry, "Introductory methods of Numerical Analysis", $3^{rd}$ Edition, New Delhi,Sep 1999.
2. Gupta.S.C & Kapoor, V.K, "Fundamentals of Mathematical Statistics", Sultan Chand &sons, New Delhi -1994.


UNIT I - Chapter 2, 3 of [1] (Sec 2.2,2.3, 2.5 & 3.3.1, 3.3.2, 3.6)

UNIT II - Chapter 5, 6, 7 of [1] (Sec 5.2.2, 5.4.1-5.4.3 & 6.3.2 & 7.2, 7.4, 7.5)

UNIT III - Chapter 6, 8 of [1] (Sec 6.3.2, 8.3.1, 8.3.2)

UNIT IV - Chapter 2, 3 of [2] (Sec 2.5 to 2.9 & 2.13.1, 2.13.2, 2.13.4, 2.14.1)

UNIT V - Chapter 10 of [2] (Sec 10.2, 10.4, 10.7)

**BOOKS FOR REFERENCE**


1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Private Limited,1999.
2. C.E. Froberg, Introduction to Numerical Analysis, II Edn., Addison Wesley,1979


**Course Outcomes:**

| CO No. | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Cognitive Levels (K-Levels) |
|---|---|---|
| **CO 1** | Evaluate algebraic and transcendental equation using numerical methods. | **K1** |
| **CO 2** | Evaluate finite integrals using Trapezoidal and Simpsons rule and Solve differential equation and integration. | **K2** |
| **CO 3** | Find the solution of linear system of equation by Gaussian Elimination, Method of Factorization, Gauss Jacobi, Gauss Seidel Methods. | **K3** |
| **CO 4** | Categorize and evaluate various measures of central tendency. | **K3** |
| **CO 5** | Calculate correlation and regression. | **K4** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | | | | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **I &II** | **24UCA1A2** | **NUMERICAL METHODS AND STATISTICS** | | | | | **6** | | | | **2** |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| **CO-2** | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| **CO-3** | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| **CO-4** | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| **CO-5** | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| **Mean overall score** | | | | | | | | | | | **2.2 (High)** |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| II | 24UCA2A3 | OPERATION RESEARCH | 4 | 3 |

**Objective:**

To train the students to solve assignment problems, transportationproblems

.

**UNIT I** **(12 Periods)**

Operations Research: Introduction - Basics of OR – OR & decision making – Role of Computers in OR - Linear programming formulations & graphical solution of two variables– Canonical & standard forms of LPP.

**UNIT II** **(12 Periods)**

Game Theory: Introduction-Game with Pure Strategies-Game with Mixed Strategies-Dominance Property-Graphical Method For 2xn Or Mx2 Games

**UNIT III** **(12 Periods)**

Transportation problem: North West Corner Method – Least Cost Method – Vogel's Approximation Method -Assignment Problem: Hungarian assignment problem.

**UNIT IV** **(12 Periods)**

Sequencing problem: Processing of n jobs through two machines – Processingofnjobsthrough3machines–processing of two jobs through machines.

**UNIT V** **(12 Periods)**

Networks: Network – Fulkerson's rule - measure of activity – PERT computation – CPM computation - Resource scheduling.

**TEXT BOOK(S)**

1. S. Kalavathy, Operations Research Vikas Publishing House Pvt Ltd.

UNIT I - Chapter 1 [1], Chapter 2 [2]
UNIT II - Chapter 17 [2]
UNIT III - Chapter 8 [2]
UNIT IV - Chapter 12 [2]
UNIT V - Chapter 13 [2]

**BOOKS FOR REFERENCE**


1. Prem Kumar Gupta and D.S. Hira, "Operations Research" An Introduction, S. Chand and Co.,Ltd. New Delhi,
2. Hamdy A. Taha, "Operations Research" ($7^{th}$ Edn.), McMillan Publishing Company,New Delhi,1982.
3. Manmohan & Gupta, "Operations Research", Sultan Chand Publishers, New Delhi

**Course Outcomes:**

| CO No. | CO-STATEMENTS | Cognitive Levels (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO 1** | Recognize and relate LPP and solving LPP using graphical method. | **K1** |
| **CO 2** | Discuss and demonstrate the game theory . | **K3** |
| **CO 3** | Explain Transportation problem and Evaluate its initial basic feasible solution | **K3** |
| **CO 4** | Discuss and solve sequencing and machine problems. | **K3** |
| **CO 5** | Describe and Construct Network and compute PERT and CPM | **K4** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **II** | **24UCA2A3/24UCS2A3** | | **OPERATION RESEARCH** | | | | | | | **4** | **3** |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| **CO-2** | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| **CO-3** | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| **CO-4** | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| **CO-5** | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| **Mean overall score** | | | | | | | | | | | **2.2 (High)** |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3C5 | CC-V: JAVA P ROGRAMMING | 5 | 5 |

**Objective:**

To understand the basic concepts of Object Oriented Programming with Java language.

**Unit I** **(20 Periods)**

Object Oriented Programming : Introduction to OOP – Objects and Classes – Characteristics of OOP – Difference between OOP and Procedure Oriented Language – Introduction to java Programming : Introduction – Features of Java – Comparing java and Other Languages – Applications and Applets – Java Development Kit – Complex Programs – Java Source File Structure – Prerequisites for Compiling and Running Java Programs

**Unit II** **(20 Periods)**

Java Language Fundamentals : The Building Blocks of Java – Data Types – Variable Declarations – Wrapper Classes – Operations and Assignment – Control Structures – Arrays – Strings – StringBuffer Class

**Unit III** **(20 Periods)**

Java as an OOP Language : Defining Classes – Modifiers – Packages – Interfaces.

**Unit IV** **(15 Periods)**

Exception Handling : Introduction – Basics of Exception Handling – Exception Hierarchy – Constructors and Methods in Throwable Class - Unchecked and Checked Exceptions – Handling Exceptions in Java – Exception and Inheritance – Throwing User-defined Exceptions – Redirecting and Rethrowing Exceptions – Advantages of Exception Handling Mechanism – Multithreading : Introduction – Creating Threads – Thread Life-cycle – Thread Priorities and Thread Scheduling – Thread Synchronization– Daemon Threads – Tread Groups – Communication of Threads

**Unit V** **(15 Periods)**

Files and I/O Streams : Overview – Java I/O – File Streams – FileInputStream and

FileOutputStream – File Streams – RandomAccess File – Serialization - Applets : Introduction – Java Applications versus Java Applets – Applet Life-cycle – Working with Applets – The HTML APPLET Tag – The java.Applet package

**Text Book :**

1. Object Oriented Programming through Java,P.Radha Krishna,University Press,2011.

**Reference Book:**

1. Java Programming, K.Rajkumar, Pearson India, 2013.

**Course Outcomes**

| CO NO | CO-STATEMENTS | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Remember the program of Java with its syntax and semantics | **K1** |
| **CO2** | Understand the programming principles in java. (Datatypes, operators, branching and looping, arrays, strings) | **K2** |
| **CO3** | Learn the concept of modifiers and packages | **K3** |
| **CO4** | Apply the programming principles learnt in real- Time problem | **K4** |
| **CO5** | Analyze the various methods of solving a problem and choose the best method | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme Specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| III | 24UCA3C5 | | CC-V: JAVA PROGRAMMING | | | | | | | 5 | 5 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.2 |
| CO-2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 2.3 |
| CO-3 | 3 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 3 | 3 | 2.6 |
| CO-4 | 2 | 1 | 3 | 1 | 3 | 3 | 1 | 3 | 1 | 3 | 2.1 |
| CO-5 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 2 | 2.1 |
| Mean overall score | | | | | | | | | | | 2.2 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3C6P | CC-VI PRACTICAL: JAVA PROGRAMMING LAB | 4 | 3 |

**Objective :** To Impart Practical Training in Java Programming Language.

1. Write a program to sort the given numbers using arrays. **(5 Periods)**
2. Write a program to implement the FIND and REPLACE operations in the given Multiple text**.** **(5 Periods)**
3. Write a program to implement a calculator to perform basic arithmetic Operations. **(5 Periods)**
4. Write a program to find the area of a rectangle using constructor. **(5 Periods)**
5. Write a program to find the student's percentage and grade using command line arguments. **(5 Periods)**
6. Write a program to draw circle or triangle or square using polymorphism and inheritance. **(4 Periods)**
7. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problems**.** **(4 Periods)**
8. Write a program to create threads and assign priorities to them . **(4 Periods)**
9. Write a program to develop an applet to play multiple audio clips using multithreading. **(4 Periods)**
10. Write a program to create a window with three check boxes called red, green and blue.

**Course Outcomes**

| CO NO | CO-STATEMENTS | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| CO1 | Remember the program java with its syntax and semantics. | K1 |
| CO2 | Able to understand and design the solution to a problem using object-oriented programming | K2 |
| CO3 | Achieve code reusability and extensibility by means of Inheritance and Polymorphism. | K3 |
| CO4 | Analyze and implement the various methods of solving a problem | K4 |
| CO5 | Develop an application with GUI by having Applets | K5 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| III | 24UCA3C6P | | CC-VI PRACTICAL: JAVA P ROGRAMMING LAB | | | | | | | 4 | 3 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.4 |
| CO-2 | 3 | 2 | 2 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 2.5 |
| CO-3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 2.7 |
| CO-4 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 1 | 3 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3A4 | AC-IV : FINANCIAL ACCOUNTING | 5 | 4 |

**OBJECTIVE:**

To enable the students to know the importance of computer applicaiton in business.

**UNIT-I** **(15 periods)**

Accounting Principles and concept – Double entry book keeping – Income and expenditure – Accounting record and system – Assets and Liabilities – Depreciation ,Depletion and amortization – Accounting for depreciation.

**UNIT – II** **(15 periods)**

Journal – Ledger –Trial balance – Trading , Manufacturing and profit and loss account – Balance sheet.

**UNIT – III** **(15 periods)**

Analysis and interpretation of financial statement with ratios.

**UNIT – IV** **(15 periods)**

Cost Accounting – Methods and Techniques of cost accounting - classification of cost – Material cost – Labour cost – Overhead –fixed and variable cost – cost volume – Profit analysis – Marginal costing and decision making.

**UNIT – V** **(15 periods)**

Budgeting and budgetary control – types of budgets – Preparation of various functional budgets – preparation of cash budgets – flexible budgets – Advantages of budgeting and budgetary control.

**TEXT BOOKS :**


1. Narayanaswamy R. Financial Accounting: A Managerial Perspective. PHI Learning Pvt. Ltd., Delhi
2. Robert N. Anthony, David F. Hawkins, Kenneth A. Merchant. Accountancy- text and cases. McGraw Hill Education (India) Private Limited, New Delhi.
3. Garg CA Kamal, and Sehrawat Neeraj Kumar. Beginner`s Guide to Ind AS & IFRS. Bharat Law House Pvt. Ltd., New Delhi
4. Maheshwari S. N., Maheshwari Sunil K., and Maheshwari Sharad K, An Introduction to Accountancy, Vikas Publishing House Pvt. Ltd.

**REFERENCE BOOKS:**

1. Lal Jawahar. Corporate Financial Reporting: Theory, Practice & Cases. Taxman Publications Private Limited. Patricia M. Dechow, Richard G. Sloan and Amy P. Sweeney: Detecting earning management, the accounting review.

**Course Outcomes:**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Attain the fundamentals of commerce and enhancing comprehensive application of all the subjects. | **K1** |
| **CO2** | Enhance the skills in the field of marketing, finance and overall administration abilities of the Company | **K2** |
| **CO3** | Gain specializations in Accounting, costing, banking, and finance and marketing | **K3** |
| **CO4** | Acquire entrepreneurial skills and provide employment opportunities to the society. | **K4** |
| **CO5** | Compose the students to face upcoming challenges in the industry and business. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **IIII** | **24UCA3A4** | **AC-IV: FINANCIAL ACCOUNTING** | | | | | **4** | **4** | | | |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| **CO-2** | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| **CO-3** | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| **CO-4** | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| **CO-5** | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| **Mean overall score** | | | | | | | | | | | **2.2 (High)** |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3N1A | NME-I : BASIC OF COMPUTER PROGRAMMING | 2 | 2 |

**Objective:** On completion of the course, the students will know the basics of computers and programming techniques.

**UNIT 1:** **(6 Periods)**

**Introduction to computer**: Introduction – Characteristics of computer – Generation of computers – Classification of computers – The computer system – Application of Computer.

**Computer Architecture**: Introduction – Central Processing Unit – Memory

**UNIT 2:** **(6 Periods)**

**Computer Program**: Introduction – Developing a program – Algorithm – Flow chart.

**Computer Languages**: Introduction – evolution of programming languages Classification of programming languages.

**UNIT 3:** **(6 Periods)**

**Computer Software**: Introduction – Software definition – Relationship between software and hardware

– software categories – System Software – Application Software.

**UNIT 4:** **(6 Periods)**

**Introduction to C** – overview of computers and interpreters – structure of a C program – C Character set – C keyword – Constants – Variables – Data types – Types Conversion – Operators and Expressions.**UNIT 5:** **(6 Periods)**

**Input and Output in C** – Decision statements: IF, ELSE – IF, BREAK, CONTINUE, GOTO and SWITCH. Loop Control statements: FOR, WHILE, DO-WHILE.

**Text Book(s)**:

1. Jennifer Sargunar, "Introduction to Computer Science", ITL Education Solution Limited, PearsonEducation, 2nd edition, 2011

2. .Ashok, N.Kamthane, **"**Programming with ANSI and TURBO C", Pearson Education, 3rd Indianprint, 2003

**Reference Book:**

1. Balagurusamy.E**, "**Programming in C", Tata McGraw Hill, 4th Edition, 2008.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | To Familiarize operating systems, programming languages,peripheral devices, networking, multimedia and internet. | K2 |
| **CO2** | Develops the use of the C programming language toimplement various algorithms, and develops the basic concepts and terminology of programming in general. | K3 |
| **CO3** | Write, compile and debug programs in C language and usedifferent data types for writing the programs. | K3 |
| **CO4** | Understanding the concept of input and output devices ofComputers and how it works and recognize the basic terminology used in computer programming. | K4 |
| **CO5** | Design programs connecting decision structures, loops andfunctions. | K5 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **III** | **24UCA3N1A** | **NME-I : BASIC OF COMPUTER PROGRAMMING** | | | | | **2** | **2** | | | |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2.5 |
| **CO-2** | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2.5 |
| **CO-3** | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2.7 |
| **CO-4** | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 3 | 2.1 |
| **CO-5** | 3 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| **Mean overall score** | | | | | | | | | | | **2.4 (High)** |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3N1B | NME-I : WORKING PRINCIPLES OF INTERNET | 2 | 2 |

**Objective:** To understand the working Principles of Internet

**Unit I** **(6 Periods)**

What is Internet? The Internet's underlying Architecture.

**Unit II** **(6 Periods)**

Connecting to the Internet – Communicating on the Internet.

**Unit III** **(6 Periods)**

How the World Wide Web works. Common Internet tools.

**Unit IV** **(6 Periods)**

Multimedia on the Internet – Intranet and shopping on the Internet.

**Unit V** **(6 Periods)**

Safeguarding the Internet.

**Text Book :**

1. How the Internet Works, Preston Gralla, Pearson Education, Eighth Edition, 2006

**Reference Book :**

1. Internet for Everyone, Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand internet's underlying architecture | K2 |
| **CO2** | Explain the different types of connection to internet | K3 |
| **CO3** | Understand the concepts of how tocreate web pages and websites | K3 |
| **CO4** | Analyse about multimedia communication on internet | K4 |
| **CO5** | Analyse about online shopping on web browser. | K4 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| III | 24UCA3N1B | NME-I : WORKING PRINCIPLES OF INTERNET | | | | | 2 | 2 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 2.4 |
| CO-2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2.2 |
| CO-3 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 2.5 |
| CO-4 | 3 | 1 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2.4 |
| CO-5 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| III | 24UCA3N1C | NME-I : FUNDAMENTALS OF INFORMATION TECHNOLOGY | 2 | 2 |

**Objective :** To Provide the Basic Concepts in Information Technology

**Unit I** **(6 Periods)**

Introduction to Computers - Generation of Computers - Classfication of Digital Computer - Anatomy of Digital Computer.

**Unit II** **(6 Periods)**

CPU and Memory - Secondary Story Devices - Input Devices - Output Devices.

**Unit III** **(6 Periods)**

Introduction to Computer Software - Programming Language - Operating Systems - Introduction to Database Management System.

**Unit IV** **(6 Periods)**

Computer Networks - WWW and Internet - Email - Web Design

**Unit V** **(6 Periods)**

Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

**Text Book:**

1. Fundamentals of Information Technology, Alexis Leon And Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009

**Reference Book:**

1. Fundamentals of Computers and Information Technology, M.N Doja, 2005

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand basic concepts and terminology of information technology, digital computers | K2 |
| **CO2** | Have a basic understanding of personal computers and theiroperations | K3 |
| **CO3** | Understand the concepts of how tocreate web pages and websites | K3 |
| **CO4** | Depth knowledge on email and WWW concepts | K4 |
| **CO5** | Knowledge of information security, virus and worms | K5 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| III | 24UCA3N1C | NME-I : FUNDAMENTALS OF INFORMATION TECHNOLOGY | | | | | 2 | 2 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 2.4 |
| CO-2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2.2 |
| CO-3 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 2.5 |
| CO-4 | 3 | 1 | 3 | 3 | 3 | 2 | 3 | 3 | 1 | 3 | 2.5 |
| CO-5 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA4C7 | CC-VII : PHYTHON APPLICATION PROGRAMMING | 5 | 5 |

**Objective :**Learn Syntax and semantics and create Functions in Python.To handle Files, Lists and Dictionaries in Python.Understand Regular expressions and Object Oriented Programming in Python.Construct Data Structures using Python.Build Web Services and Introduction to Network Programming in Python.

**UNIT-I** **(20 Periods)**

Computer hardware architecture, Understanding programming, Words and sentences, Conversing with Python, Terminology: interpreter and compiler, Writing a program, What is a program? The building blocks of programs, What could possibly go wrong? The learning journey. Variables, expressions and statements, Values and types, Variables, Variable names and keywords, Statements, Operators and operands, Expressions, Order of operations, Modulus operator, String operations, Asking the user for input, Comments, Choosing mnemonic variable names, Conditional execution, Boolean expressions, Logical operators, Conditional execution, Alternative execution, Chained conditionals, Nested conditionals, Catching exceptions using try and except, Short circuit evaluation of logical expressions, Functions, Function calls, Built-in functions, Type conversion functions, Random numbers, Math functions, Adding new functions, Definitions and uses, Flow of execution, Parameters and arguments, Fruitful functions and void functions, Why functions?

**UNIT-II** **(20 Periods)**

Iteration, Updating variables, The while statement, Infinite loops, “Infinite loops” and break, Finishing iterations with continue, Definite loops using for, Loop patterns, Strings, A string is a sequence, Getting the length of a string using len, Traversal through a string with a loop, String slices, Strings are immutable, Looping and counting, The in operator, String comparison, string methods, Parsing strings, Format operator, Files, Persistence, Opening files, Text files and lines, Reading files, Searching through a file, Letting the user choose the

file name, Using try, except, and open, Writing files, Lists, A list is a sequence, Lists are mutable, Traversing a list, List operations, List slices, List methods, Deleting elements, Lists and functions, Lists and strings, Parsing lines, Objects and values, Aliasing, List arguments, Dictionaries, Dictionary as a set of counters, Dictionaries and files, Looping and dictionaries, Advanced text parsing .

**UNIT-III** **(20 Periods)**

Tuples, Tuples are immutable, Comparing tuples, Tuple assignment, Dictionaries and tuples, Multiple assignment with dictionaries, The most common words, Using tuples as keys in dictionaries, Sequences: strings, lists, and tuples, Regular expressions, Character matching in regular expressions, Extracting data using regular expressions, Combining searching and extracting,Escape character. Classes and objects, User-defined compound types, Attributes, The initialization method and self, Instances as parameters, Classes and functions, Time, Pure functions, Modifiers, Prototype development versus planning, Generalization, Classes and methods, Object-oriented features, print_time, Another example, A more complicated example, Optional arguments, The initialization method, Points revisited, Operator overloading, Polymorphism 4

**UNIT-IV** **(15 Periods)**

Linked lists, Embedded references, The Node class, Lists as collections, Lists and recursion, Infinite lists, The fundamental ambiguity theorem, Modifying lists, Wrappers and helpers, The Linked List class, Invariants, Stacks, Abstract data types, The Stack ADT, Implementing stacks with Python lists, Pushing and popping, Using a stack to evaluate postfix, Parsing, Evaluating postfix, Clients and providers, Queues, The Queue ADT, Linked Queue, Performance characteristics, Improved Linked Queue, Priority queue, The Golfer class

**UNIT-V** **(15 Periods)**

Networked programs, Hypertext Transport Protocol – HTTP, The World's Simplest Web Browser, Retrieving an image over HTTP, Retrieving web pages with url lib, Parsing HTML and scraping the web, Parsing HTML using Regular Expressions, Parsing HTML using BeautifulSoup, Reading binary files using url lib, Using Web Services, eXtensible Markup Language – XML, Parsing XML, Looping through nodes, JavaScript Object Notation – JSON, Parsing JSON, Application Programming Interfaces (API), Automating common tasks on your computer, File names and paths, Example: Cleaning up a photo directory, Command line arguments, Pipes

**TEXT BOOK(s):**

1. Charles Severance, "Python for Informatics", 1st Edition, CreateSpace Independent Publishing Platform, 2013.

2. Peter Wentworth, Jeffrey Elkner, Allen B. Downey, and Chris Meyers, "How to Think Like a Computer Scientist: Learning with Python", 2nd Edition, Open Book Project, 2012

**REFERENCE BOOK(s):**

1. Mark Lutz, "Learning Python", 5th Edition, O'Reilly Media, 2013.
2. Wesley Chun, "Core Python Applications Programming", Prentice Hall, 3rd Edition, 2012
3. Alex Martelli, "Python in a Nutshell", 2nd Edition, O'Reilly Media, 2006

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| CO1 | Learn the basics of python. | K2 |
| CO2 | Develop program using selection statement, Work with Looping and jump statements. | K2 |
| CO3 | Concept of function, function arguments, Implementing the concept strings in various application. | K3 |
| CO4 | Work with List, Tuples, Dictionary and usage of File handlings that is reading and writing files. | K4 |
| CO5 | Indicate the use of regular expressions and build a real time application using the python concepts. | K5 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IV | 24UCA4C7 | CC-VII : PHYTHON APPLICATION PROGRAMMING | | | | | 5 | 5 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2.4 |
| CO-3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2.7 |
| CO-4 | 3 | 1 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2.5 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2.4 |
| Mean overall score | | | | | | | | | | | 2.5 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA4C8P | CC-VIII PRACTICAL: PYTHON LAB | 4 | 4 |

**Objectives:**To be able to introduce core programming basics and program design with functions using Python programming language.To understand a range of Object-Oriented Programming, as well as in-depth data andinformation processing techniques.

**List of Programs:**

**1.** Write a program to demonstrate different number data types in Python **(4 Periods)**

2. Write a program to perform different Arithmetic Operations on numbers in Python**.**

**(4 Periods)**

3. Write a program to create, concatenate and print a string and accessing sub-string from a given string. **(4 Periods)**

4. Write a python script to print the current date in the following format "Sun May 29 02:26:23 IST2017" **(4 periods)**

5. Write a program to create, append, and remove lists in python . **(4 Periods)**

**6.** Write a program to demonstrate working with tuples in python. **(4 Periods)**

**7.** Write a program to demonstrate working with dictionaries in python . **(4 Periods)**

8. Write a python program to find largest of three numbers. **(4 Periods)**

9. Write a Python program to convert temperatures to and from Celsius, Fahrenheit.

**(4 Periods)**

[ Formula: c/5 = f-32/9]

10. Write a Python program to construct the following pattern, using a nested for loop

**(3 Periods)**

*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*

10. Write a Python script that prints prime numbers less than 20 . **(3 Periods)**

**11.** Write a python program to find factorial of a number using Recursion**.** **(3 Periods)**

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Demonstrate the understanding of syntax and semantics of Python Programming | **K1** |
| **CO2** | Identify the problem and solve using PYTHON programming techniques | **K2** |
| **CO3** | Identify suitable programming constructs for problem solving | **K3** |
| **CO4** | Analyze various concepts of PYTHON language to solve the problem in an efficient way. | **K4** |
| **CO5** | Develop a PYTHON program for a given problem and test for its correctness. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|
| IV | 24UCA4C8P | CC-VIII PRACTICAL: PYTHON LAB | | | | | | 4 | 4 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2.4 |
| CO-3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 1 | 2 | 3 | 2.5 |
| CO-4 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2.5 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2.4 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA3A5P | AC-V PRACTICAL: ACCOUNTING PACKAGE LAB | 4 | 4 |

**1.** Creation of Company. **(5 periods)**

**2.** Creation of Groups ,Alteration and Deletion. **(5 periods)**

3. Creation of Ledgers, Alteration and Deletion. **(5 periods)**

4. Vouchers, configure, Entering in Vouchers. **(5 periods)**

5. Journals, configure, enter. . **(5 periods)**

**6.** Creation of Debit Note, Credit Note. . **(5 periods)**

**7.** Maintenance of petty cash book. **(5 periods)**

**8.** Creating Stock Item, Group, Category, Godown, Purchase Order, Rejections **(5 periods)**

9. Ratio Analysis. **(5periods)**

10. Final Accounts. **(5periods)**

11. Fund Flow And Cash Flow Statement. **(6 periods)**

12. Report Preparation. **(6 periods)**

**Course Outcomes:**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Sales Ledger & Purchases Ledger | **K1** |
| **CO2** | Extracting Trial Balance | **K2** |
| **CO3** | Student by their own will create company, enter accounting voucher entries including advance voucher entries | **K3** |
| **CO4** | Reconcile bank statements, do accrual adjustments, and also print financial statements | **K4** |
| **CO5** | Preparation of Stock Group, stock items ,Stock category | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **IV** | **24UCA3A5P** | | **AC-V PRACTICAL: ACCOUNTING PACKAGE LAB** | | | | | | | **4** | **4** |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| **CO-2** | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2.1 |
| **CO-3** | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| **CO-4** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2.3 |
| **CO-5** | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| **Mean overall score** | | | | | | | | | | | **2.2 (High)** |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 21UCA4A6 | AC-VI: ACCOUNTING PACKAGE | 3 | 3 |

**Objective:**

To enable the students to know the importance of computer application in business.

**UNIT I** **(15 periods)**

Computers and Accounting - Role of Computers and Computing - Fundamentals of Computerized Accounting - Computerized Accounting Vs. Manual Accounting- Features of Tally.

**UNIT II** **(15 periods)**

Procedure for creating a new company - Directory Name/Mailing Name/Address/ Groups creation - Editing and Deleting Groups.

**UNIT III** **(15 periods)**

Display of predefined vouchers - Voucher creations and alteration of vouchers while or after creating transaction - Types **of vouchers - Payment voucher, receipt voucher - Sales voucher- purchase voucher.**

**UNIT IV** **(15 periods)**

Ledger - groups in tally - primary groups, sub groups creation of ledgers, process of creation of ledgers- balance sheet at the gateway f tally - method of showing trading, profit and loss account and balance sheet.

**UNIT V** **(15 periods)**

Creation of inventory reports -creation of stock categories - stock items - stock groups

**TEXT BOOK(S):**

1. TALLY - Accounting Software S.Palanivel- Margham Publication.

2. Computer Applications in Business - Dr.Rajkumar

**Course Outcomes:**

| CO NO | CO-STATEMENTS | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Attain the fundamentals of commerce and enhancing comprehensive application of all the subjects. | **K1** |
| **CO2** | Enhance the skills in the field of marketing, finance and overall administration abilities of the Company | **K2** |
| **CO3** | Gain specializations in Accounting, costing, banking, and finance and marketing | **K3** |
| **CO4** | Acquire entrepreneurial skills and provide employment opportunities to the society. | **K4** |
| **CO5** | Compose the students to face upcoming challenges in the industry and business. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I | 21UCA4A6 | | AC-VI: ACCOUNTING PACKAGE | | | | | | | 3 | 3 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.3 |
| CO-2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2.1 |
| CO-3 | 2 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2.2 |
| CO-4 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2.3 |
| CO-5 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.3 High |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA4N2A | NME-II: SCRIPTING LANGUAGES | 2 | 2 |

**Objective:** To introduce the script programming paradigm.

**Unit-I** **(6 Periods)**

Internet basics, introduction to HTML, list, creating tables, linking documents, frames, graphics to HTMLdocuments, style sheet basics, adding styles to documents.

**Unit-II** **(6 Periods)**

Creating style sheet tools, style sheet properties, font, text, list, color and background color, box,displayproperties.

**Unit-III** **(6 Periods)**

Introduction to JavaScript, Advantages of JavaScript, JavaScript Syntax, data types, variables, arrays. Operators andExpressions, Looping constructors, functions, dialog box, JavaScript, document object model.

**Unit-IV** **(6 Periods)**

Introduction – objects in HTML, event handling, window object, document object, browser object, objectmethods, built-inobjects, user defined objects, cookies.

**Unit-V** **(6 Periods)**

DHTML, cascading style sheets, class, external style sheets, working with JavaScript style sheet.

**Text Book(s):**

1. Thomas Powell- HTML & CSS: The complete Reference, Fifth Edition,2017
2. "MasteringHTML,CSS&JavaScript"WebPublishing–LauraLemay,JenniferKymin-2016
3.

**Reference Book(s):**

1. Web Developers Reference Guide by Joshua Johaman, Richard Zea, Talha Khan, Packet Publishing2016.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | To master the theory behind scripting and its relationship to classic programming. Understanding basic in html formattinglinks frames all in htmls | **K1** |
| **CO2** | To gain some fluency programming in Ruby, JavaScript, Perl,Python, and related languages | **K2** |
| **CO3** | To express java scripts javascript syntax ,advantages documentobject functions | **K3** |
| **CO4** | Knowledge about objects in html event handling functions | **K4** |
| **CO5** | Analyse about DHTML CSS, javascript functions | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IV | 24UCA4N2A | | NME-II: SCRIPTING LANGUAGES | | | | | | | 2 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 2.4 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2.6 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2.5 |
| Mean overall score | | | | | | | | | | | 2.5 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA4N2B | NME-II: OFFICE AUTOMATION | 2 | 2 |

**Objective :** To provide an in-depth training in use of office automation, internet and internet tools.

**Unit-I** **(6 Periods)**

**Introduction to Computer:** Definition - History & Generation of Computer) - Applications ofComputer – Advantages of Computer –- Characteristics of Computer – Hardware & Software.

**Unit-II** **(6 Periods)**

Definition of Operating System - Functions of OS - Types of OS- Windows Desk top - GUI: Desktop icons and their functions- Dialog Boxes- Task Bar- Parts of Windows. Linux Programming & Administration- Linux Commands and Utilities.

**Unit-III** **(6 Periods)**

MS Word - Working with Documents- Formatting Documents- Setting Page style- Creating Tables- Drawing- Tools- Printing Documents

**Unit-IV** **(6 Periods)**

MS Excel- Entering & Deleting Data- Setting Formula- Formatting Spreadsheets- Working withsheets- Chart- . Printing. Using Tools.

**Unit-V** **(6 Periods)**

MS Access: Introduction, Planning a Database, Starting Access, Access Screen, Creating a New Database, Creating Tables, Working with Forms, Creating queries, Finding Information inDatabases, Creating Reports, Types of Reports, Printing & Print Preview – Importing data from other databases. MS Power point: Introduction to presentation – Opening new presentation, Different presentation templates, Setting backgrounds, Selecting presentationlayouts. Creating a presentation - Setting Presentation style, Adding text to the Presentation.

**Text Book(s):**

1.Fundamentals of Computer-V.Rajaraman-Prentics-Hall of India.

**Reference Book(s) :**

1.Microsoft Office 2007 Bible –John Walkenbach,Herb Tyson,Faithe Wempen,CaryN.Prague,Michael R.Groh,Peter G.Aitken ,and Lisa A.Bucki-Wiley India pvt ltd.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand basic concepts word excel so students would beable to documents, spreadsheets, make small presentations. | **K1** |
| **CO2** | Students would be able to understand about operating systems. | **K2** |
| **CO3** | Understand the formatting documentsprinting documents | **K3** |
| **CO4** | Analyse about Excel sheet deleting inserting formatting | **K4** |
| **CO5** | Knowledge about MS-Access planning database, reports | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IV | 24UCA4N2B | NME-II: OFFICE AUTOMATION | | | | | 2 | 2 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 2.4 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2.6 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2.5 |
| Mean overall score | | | | | | | | | | | 2.5 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| IV | 24UCA4N2C | NME-II: PC HARDWARE AND TROUBLE SHOOTING | 2 | 2 |

**Objective :**To identify the names, distinguishing features, and units for measuring different kinds of memory and storage devices.

**Unit –I** **(6 Periods)**

Introduction - Computer Organization – Number Systems and Codes – Memory – ALU– CU – Instruction prefetch – Interrupts – I/O Techniques – Device Controllers – Error Detection Techniques – Microprocessor – Personal Computer Concepts – Advanced System Concepts – Microcomputer Concepts – OS – Multitasking and Multiprogramming – Virtual Memory – Cache Memory .

**Unit – II** **(6 Periods)**

Peripheral Devices-Introduction – Keyboard – CRT Display Monitor – Printer – Magnetic Storage Devices –FDD – HDD – Special Types of Disk Drives – Mouse and Track ball – Modem .

**Unit – III** **(6 Periods)**

PC Hardware Overview:Introduction – Hardware BIOS DOS Interaction – The PC family – PC hardware – Inside the System Box – Motherboard Logic – Memory Space – Peripheral Interfaces and Controllers – Keyboard Interface – CRT Display interface – FDC – HDC.

**Unit – IV** **(6 Periods)**

Installation and Preventive Maintenance -Introduction – system configuration – pre installation planning – Installation practice –routine checks – PC Assembling and integration – BIOS setup – Engineering versions and compatibility – preventive maintenance – DOS – Virus – Data Recovery.

**Unit – V** **(6 Periods)**

Troubleshooting-Introduction – computer faults – Nature of faults – Types of faults – Diagnostic programs and tools – Microprocessor and Firmware .

**Text Book(s):**

1. B. Govindarajalu, “IBM PC Clones Hardware, Troubleshooting and Maintenance”, 2/E, TMH, 2002.

**References Book(s):**

1. Peter Abel, Niyaz Nizamuddin, “IMB PC Assembly Language and Programming”,PearsonEducation, 2007
2. Scott Mueller, “Repairing PC's”, PHI,1992

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | To understand the concept Computer organization or DMAController number systems | **K1** |
| **CO2** | To explain peripherals devices, CRT monitors | **K2** |
| **CO3** | To introduce about bios and dosinteraction pc family | **K3** |
| **CO4** | To explain about installation and pervasive maintenance | **K4** |
| **CO5** | Trouble shootingtools trouble shooting steps to solve computer faults in a process systems | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IV | 24UCA4N2C | NME-II: PC HARDWARE AND TROUBLE SHOOTING | | | | | 2 | 2 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 3 | 1 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 2.1 |
| CO-4 | 3 | 2 | 3 | 2 | 1 | 2 | 3 | 3 | 2 | 2 | 2.3 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2.4 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5C9 | CC-IX: CYBER SECURITY | 5 | 5 |

**Objective:** To Introduce the students to the fundamental knowledge of computer security.

**Unit I** **(20 Periods)**

INTRODUCTION: Cyber Security–Cyber Security policy–Domain of Cyber Security Policy–Laws and Regulations–Enterprise Policy–Technology Operations–Technology Configuration-Strategy Versus Policy–Cyber Security Evolution–Productivity–Internet–E commerce–Counter Measures Challenges.

**Unit II** **(20 Periods)**

CYBER SECURITY OBJECTIVES AND GUIDANCE: Cyber Security Metrics–Security Management Goals–Counting Vulnerabilities–Security Frameworks–E Commerce Systems–Industrial Control Systems –Personal Mobile Devices–Security Policy Objectives–Guidance for Decision Makers–Tone at the Top–Policy as a Project Cyber Security Management– Arriving at Goals–Cyber Security Documentation–The Catalog Approach–Catalog Format– Cyber Security Policy Taxonomy.

**Unit III** **(20 Periods)**

CYBER SECURITY POLICY CATALOG: Cyber Governance Issues– Net Neutrality – Internet Names and Numbers–Copyright and Trademarks – Email and Messaging-Cyber User Issues Advertising- Impersonation–Appropriate, Use–Cyber Crime–Geo location–Privacy-Cyber Conflict Issues Intellectual property Theft–Cyber Espionage – Cyber Sabotage – Cyber Welfare.

**Unit IV** **(15 Periods)**

CYBER MANGEMENT ISSUES: Fiduciary Responsibility – Risk Management – Professional Certification–Supply Chain–Security Principles–Research and Development–Cyber Infrastructure Issue–Banking and finance–Health care–Industrial Control systems.

**Unit V** **(15 Periods)**

Government's Approach to Cyber Security Policy.

**Text Book(s):**

1. Jennifer L. Bayuk,J.Healey,P. Rohmeyer,MarcusSachs,Jeffrey Schmidt
2. JosephWeiss"Cyber Security Policy Guidebook" John Wiley & Sons 2012.

**Reference Book(s):**


1. RickHoward"Cyber Security Essentials"Auerbach Publications 2011.
2. DanShoemakerCyber security The Essential Body Of Knowledge, 1sted.Cengage Learning2011


**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Various Cyber Security Policy | **K1** |
| **CO2** | To understand security Policy catalog | **K2** |
| **CO3** | Knowledge about threats, vulnerabilities and attacks | **K3** |
| **CO4** | Understanding of the need to provide a positive security influence | **K4** |
| **CO5** | Analyse Cyber Management issues | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5C9 | CC-IX: CYBER SECURITY | | | | | 5 | 5 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2 | 2.3 |
| CO-4 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2.4 |
| CO-5 | 2 | 3 | 2 | 3 | 1 | 3 | 1 | 2 | 3 | 3 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5C10 | CC-X: INTERNET OF THINGS | 5 | 5 |

**Objective:**

Students will understand the concepts of Internet of Things and can able to build IOT Applications.

**Unit – I** **(15 Periods)**

**INTRODUCTION TO INTERNET OF THINGS** : Introduction-Physical Design of IOT-Logical design of IOT-IOT Enabling Technologies-IOT Levels & Deployment Technologies. **DEMYSTIFYING THE IOT PARADIGM:** The Emerging IoT Flavors-The Industrial Internet of Things (IIoT) Consumer Internet of Things **(**CIoT)-Social Internet of Things **(**SIoT**)** - Semantics for the Interoperable IoT -Cognitive Internet of Things (CIoT).

**Unit – II:** **(15 Periods)**

**REALIZATION OF IOT ECOSYSTEM USING WIRELESS TECHNOLOGIES :** Introduction-Architecture for IoT Using Mobile Devices -Mobile Technologies for Supporting IoT Ecosystem-Mobile Use Cases for IoT -Low Power Wide Area Networking Technologies-Sigfox - Weightless -NWave-Ingenu-LoRa.

**Unit-III:** **(15 Periods)**

**INFRASTRUCTURE AND SERVICE DISCOVERY PROTOCOLS FOR THE IOT ECOSYSTEM:** Introduction-Layered Architecture for IoT-Protocol Architecture of IoT - Infrastructure Protocols-Device or Service Discovery for IoT-Protocols for IoT Service Discover.

**Unit-IV:** **(15 Periods)**

**IOT AND M2M:**Introduction-M2M-Difference between IOT and M2M-SDN and NFV for IOT- DEVELOPING IOT: IOT Design Methodology.

**Unit-V:** **(15 Periods)**

**SECURITY MANAGEMENT OF AN IOT ECOSYSTEM :**Introduction-Security Requirements of an IoT Infrastructure-Authentication, Authorization, and Audit Trial (AAA) Framework-Defense-in- Depth-Security Concerns of Cloud Platforms-Security Threats of Big Data-Security Threats in Smart phones-Security Solutions for Mobile Devices -Security Concerns in IoT Components -Security Measures for IoT Platforms/Devices.

**Text Book(s):**

1. Pethuru Raj And Anupama C.Raman,"The Internet Of Things Enabling chnologies, Platforms, and Use Cases ",Taylor & Francis,CRC Press,1stEdition,2017.

2. Arshdeep Bahga,Vijay Madisetti, "Internet of Things, A Hands-On Approach ",UniversitiesPress(INDIA)Private Limited ,1stEdition,2015.

**Reference Book(s)**

1. Jan Holler , VlasiosTsiatsis,Catherine Mulligan,Stefan Avesand,Stamatis Karnouskos,David Boyle, "From Machine-to –Machine to the Internet of Things :Introduction to a New Age of Intelligence",1stEdition,Academic Press,2014

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand the application areas of IOT | **K1** |
| **CO2** | Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks | **K2** |
| **CO3** | Understand building blocks of Internet of Things and characteristics | **K3** |
| **CO4** | Compare different Application protocols for IoT | **K4** |
| **CO5** | Identify and analyse sensor technologies for sensing real world entities and understand the role of IoT in various domains of Industry. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5C10 | | CC-X: INTERNET OF THINGS | | | | | | | 5 | 5 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 2.4 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2.6 |
| CO-5 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2.5 |
| Mean overall score | | | | | | | | | | | 2.5 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5C11 | CC-XI: SOFTWARE ENGINEERING | 5 | 5 |

**Objective**

To introduce the fundamentals of Software Engineering, Abstract concepts and how these concepts are used in problem solving.

**UNIT-I** **(18 Periods)**

**Introduction to Software Engineering** : Definitions - Size Factors - Quality and Productivity Factors - Managerial Issues - Planning a Software Project : Defining the Problem - Goals and Requirements - Solution Strategy - Planning the Development Process : Various Models - Planning an Organizational Structure - Planning Activities.

**UNIT-II** **(18 Periods)**

**Measuring Software Size:** Size measures – A size measurement framework – Establishing a counting standard – Using LOC counts – Reuse considerations – LOC accounting – Calculating productivity – LOC counters. **Estimating Software Size:** Popular estimating methods – Proxy-based estimating – The PROBE size estimating method .

**UNIT-III** **(18 Periods)**

Software design - Design concepts - Modules And Modularization Criteria - Design Notations - Design Techniques - Design Considerations - Real Time and Distributed System Design - Test Plans - Milestones, Walkthroughs and Inspections - Design Guidelines Implementation Issues : Structure Loading Techniques - Coding Style - Standards And Guidelines - Documentation Guidelines.

**UNIT-IV** **(18 Periods)**

**Software Quality Management:** Meaning of software quality – The economics of software quality– Developing a quality strategy – Process benchmarking – Yield management – Defect removal strategies – Defect prevention strategies .

**UNIT-V** **(18 Periods)**

Unit - Testing And Debugging - System Testing - Formal Verification Software Maintenance -Maintainability - Managerial Aspect Of Software Maintenance - Configuration Management - Source Code Metrics - Other Maintenance Tools And Techniques.

**TEXT BOOK (s)**:

1 .Watts S. Humphrey, A Discipline for Software Engineering, Pearson Education Inc., 2012.

2. Software Engineering Concepts 1997 Edition By RICHARD FAIRLEY Publishers : TATA McGRAW-Hill Edition.

**REFERENCE BOOK(s):**

1. R. S. Pressman, *Software Engineering*, Sixth Edition, McGraw Hill International Edition, 2005.

2. Software Engineering VI Edition, Author : ROGER S . PRESSMAN Publishers TATA McGRAW - HILL International Edition

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Decompose the given project in various phases of a lifecycle. | **K1** |
| **CO2** | Choose appropriate process model depending on the user requirements | **K2** |
| **CO3** | Perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance. | **K3** |
| **CO4** | Analyse various processes used in all the phases of the product. | **K4** |
| **CO5** | Apply the knowledge, techniques, and skills in the development of a software product | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5C11 | | CC-XI: SOFTWARE ENGINEERING | | | | | | | 5 | 5 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.4 |
| CO-2 | 3 | 2 | 2 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 2.5 |
| CO-3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 2.7 |
| CO-4 | 2 | 1 | 3 | 2 | 3 | 2 | 2 | 3 | 1 | 3 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5C12P | CC-XII PRACTICAL : CYBER SECURITY LAB | 6 | 3 |

**Objective :**

To Design and implementation of a simple client/server model and running application using sockets and TCP/IP.

1. Implementation of Substitution and Transposition ciphers **(5 Periods)**
2. Implementation of Data Encryption Standard **(5 Periods)**
3. Implementation of International Data Encryption Algorithm **(5 Periods)**
4. Implementation of Advanced Encryption Standard **(5 Periods)**
5. Implementation of RSA Algorithm **(5 Periods)**
6. Implementation of Diffie-Hellman Key Exchange **(4 Periods)**
7. Implementation of Message Authentication Codes **(4 Periods)**
8. Implementation of Hash functions **(4 Periods)**
9. Implementation of Digital Signature Standard **(4 Periods)**
10. Hiding of confidential information within Image **(4 Periods)**

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Get the skill to identify cyber threats/attacks. | **K2** |
| **CO2** | Knowledge on Advanced Encryption Standard | **K2** |
| **CO3** | Understand to work with Message Authentication Codes | **K3** |
| **CO4** | Execute Digital Signature Standard | **K4** |
| **CO5** | Implement Data Encryption Algorithm | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5C12P | CC-XII PRACTICAL : CYBER SECURITY LAB | | | | | 6 | 3 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.3 |
| CO-2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2.5 |
| CO-4 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 3 | 3 | 3 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5MBE1A | MBE-I: E-COMMERCE AND M-COMMERCE | 4 | 4 |

**Objective:**

To understand the E – commerce strategies and value chains and the M-commerce services.

**UNIT-1** **(12 Periods)**

**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-2** **(12 Periods)**

**MOBILE COMMERCE :**Introduction – Infrastructure Of M– Commerce – Types Of Mobile Commerce Services – Technologies Of Wireless Business – Benefits And Limitations, Support, Mobile Marketing & Advertisement, Non–Internet Applications In M– Commerce Wireless/Wired Commerce Comparisons.

**UNIT-3** **(12 Periods)**

**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-4** **(12 Periods)**

**MOBILE COMMERCE: THEORY AND APPLICATIONS :**The Ecology Of Mobile Commerce – The Wireless Application Protocol – Mobile Business Services –Mobile Portal – Factors Influencing The Adoption Of Mobile Gaming Services – Mobile Data Technologies And Small Business Adoption And Diffusion – M–Commerce In The Automotive Industry– Location– Based Services: Criteria For Adoption And Solution Deployment – The Role Of MobileAdvertising In Building A Brand – M– Commerce Business Models.

**UNIT-5** **(12 Periods)**

**BUSINESS– TO– BUSINESS MOBILE E-COMMERCE :**Enterprise Enablement – Email And Messaging – Field Force Automation (Insurance,Real Estate,Maintenance, Healthcare) – Field Sales Support (Content Access, Inventory) – Asset Tracking AndMaintenance/Management – Remote IT Support – Customer Retention (B2C Services,Financial,Special Deals) – Warehouse Automation – Security

**TEXT BOOK(S):**

1. Dave Chaffey, "E-Business and E-Commerce Management", Third Edition, 2009, Pearson Education.

**REFERENCE BOOK(s):**

1. Brian E. Mennecke, Troy J. Strader, "Mobile Commerce: Technology, Theory and Applications", Idea Group Inc., IRM press, 2003.
2. P. J. Louis, " M-Commerce Crash Course", McGraw- Hill Companies February 2001.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Learn the concept of ecommerce and its revolution. | **K1** |
| **CO2** | Understand the infrastructure of the Internet and how the various elements contribute to the marketing distribution solutions. | **K2** |
| **CO3** | Gain knowledge on to develop solutions for implementing an ecommerce site. | **K3** |
| **CO4** | Analyze the role of M–Commerce in The Automotive Industry | **K4** |
| **CO5** | Analyze business to business mobile ecommerce | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5MBE1A | MBE-I: E-COMMERCE AND M-COMMERCE | | | | | 4 | 4 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.3 |
| CO-2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2.5 |
| CO-4 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 3 | 3 | 3 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5MBE1B | MBE-I: SYSTEMS ANALYSIS AND DESIGN | 4 | 4 |

**Objective :** It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

**Unit-I** **(12 Periods)**

System concept and the information system environment: Introduction - The System Concept - Characteristics of a system - Elements of a system - Types of systems. The System Development Life Cycle - Consideration for Candidate Systems. Role of the Systems Analyst: The Multifaceted Role of the Analyst – The Place of the Analyst in the MIS Organization - Rising Positions in System Development.

**Unit-II** **(12 Periods)**

System Planning and the Initial Investigation: Introduction- Bases for Planning in Systems Analysis:

Dimensions of Planning - Initial Investigation: Need identification – Determining the user's information requirements- Background Analysis -Information Gathering: Introduction - Information Gathering Tools.

**Unit-III** **(12 Periods)**

Feasibility Study: Introduction -System Performance Definition - Feasibility Study considerations-Steps in feasibility study- Feasibility Report - Cost/ Benefit Analysis: Introduction - Cost / Benefit Analysis- Cost/Benefit categories- Procedure for Cost/Benefit Determination.

**Unit-IV** **(12 Periods)**

Process and Stages of Systems Design: Process of Design – DesignMethodologies - Major Development Activities - Audit Considerations. Input / Output and Forms Design: Input Design - Forms Design.

**Unit-V** **(12 Periods)**

File Organization and Database Design: Introduction - File Organization - Data Base Design. SystemTesting and Quality Assurance: The Test Plan - Quality Assurance- Role of the Data Processing Auditor. Implementation and Software Maintenance: Conversion – Software maintenance.

**TEXT BOOK(S):**

1. Elias M. Awad, "Systems Analysis and Design", Galgotia Publications, New Delhi, Second Edition,2010.

**REFERENCE BOOK(S):**

1. S.A. Kelkar, "Structures Systems Analysis and Design: A Concise Study", PHI Learning Private Limited, New Delhi, 2009.
2. B. Lee, "Introduction to System Analysis and Design", John Wiley &Sons, 1983.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand the life cycle of a systems development project. | **K1** |
| **CO2** | Understand the analysis and development techniques required as a team member of a medium-scale information systems development project | **K2** |
| **CO3** | Learn the effect of internet and technology on business strategies. | **K3** |
| **CO4** | Knowledge on importance of business communications. | **K4** |
| **CO5** | Analyze the life cycle of a systems development project. | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5MBE1B | MBE-I: SYSTEMS ANALYSISAND DESIGN | | | | | | | | 4 | 4 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2.5 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 2.5 |
| CO-5 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5MBE1C | MBE-I: CLIENT SERVER TECHNOLOGY | 4 | 4 |

**Objective :** To have an introduction to client server computing and to gain exposure on most common used servers, to overview the client server applications.

**Unit I** **(12 Periods)**

Introduction to Client/Server Computing: What is Client/Server Computing – Benefits of Client/Server Computing – Evolution of C/S Computing – Hardware Trends- Software Trends- Evolution of Operating Systems – Networking(N/W) Trends – Business Considerations.

**Unit II** **(12 Periods)**

Overview of C/S Applications: Components of C/S Applications – Classes of C/S Applications – Categories of C/S Applications Understanding C/S Computing: Dispelling the Myths – Obstacles – Upfront & Hidden – Open Systems & Standards – Standards – Setting Organizations – Factors for Success.

**Unit III** **(12 Periods)**

The Client Hardware & Software: Client Component – Client Operating Systems – What is GUI – Database Access – Client Software Products: GUI Environments – Converting 3270/5250 Screens – Database Tools – Client Requirements: GUI Design Standards – Open GUI Standards – Interface Independence – Testing Interfaces.

**Unit IV** **(12 Periods)**

The Server: Categories of Servers – Features of Server Machines – Classes of Server Machines Server Environment: N/W Management Environment – N/W Computing Environment – Extensions – Network Operating System – Loadable Module.

**Unit V** **(12 Periods)**

Server Operating System: OS/2 2.0 – Windows New Technology – Unix Based OS – Server Requirements: Platform Independence – Transaction Processing – Connectivity – Intelligent Database – Stored Procedure – Triggers – Load Leveling – Optimizer – Testing and Diagnostic Tools – Backup & Recovery Mechanisms..

**TEXT BOOK:**

1. Client / Server Computing, Dawna Travis Dewire, Tata McGraw Hill, 1994

Unit I : Chapters 1, 2

Unit II : Chapters 3, 4

Unit III : Chapters 5.1-5.3 , 5.5, 6, 7

Unit IV: Chapters 8, 9

Unit V : Chapters 10,11

**REFERENCE BOOK(S):**


1. Client/ Server Computing, Patrick Smith, Steve Guengerich, Second Edition, Prentice Hall of India Private Limited, New Delhi, 2002
2. Client Server Computing, Devendra Kumar, Global Academic Publishers & Distributors, 2015.


**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand the Client/Server technology and its advantages | **K1** |
| **CO2** | Understand the role of Client and Server | **K2** |
| **CO3** | Acquire the knowledge on hardware and software for Client/Server technology | **K3** |
| **CO4** | Analyse Server Operating Systems | **K4** |
| **CO5** | Acquire and understand Categories of Servers | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5MBE1C | MBE-I: CLIENT SERVER TECHNOLOGY | | | | | 4 | 4 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2.5 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 2.5 |
| CO-5 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 1 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5SBE1A | SBE-I: PAGE MAKER | 3 | 2 |

**Objective:**

It allows you to create, modify and print offline publications, such as brochures, flyers and newsletters.

**Unit I** **(6 Periods)**

Getting Started with Adobe Page Maker 7.0, Creating a Publication, Working with Text

**Unit II** **(6 Periods)**

Modifying Text, Working with Multiple Pages

**Unit III** **(6 Periods)**

Working with Graphics, Formatting Text

**Unit IV** **(6 Periods)**

Using Advanced Graphics, Adding Color and Using Mail Merge

**Unit V** **(6 Periods)**

Working with Long Publications, Publishing Electronically

**Text Book:**

Adobe PageMaker 7.0, Kevin Proot, Cengage Learning

**Course Outcomes**

| CO NO | CO-STATEMENTS | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | View the PageMaker Program Window, Work with the toolbox | **K2** |
| **CO2** | Create a business report | **K2** |
| **CO3** | Create a Newsletter, Create an Advertisement | **K3** |
| **CO4** | Create, Manipulate, and Control Text blocks | **K3** |
| **CO5** | Analyze and Working with Graphics | **K4** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5SBE1A | | SBE-I: PAGE MAKER | | | | | | | 3 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2.6 |
| CO-2 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.6 |
| CO-3 | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2.3 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2.6 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.4 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5SBE1B | SBE-I: COREL DRAW | 3 | 2 |

**Objective :** It allows you to create, modify and print offline publications, such as brochures, flyers and newsletters.

**Unit-I** **(6 Periods)**

CorelDRAW Basics.

**Unit-II** **(6 Periods)**

Drawing and Selecting

**Unit III** **(6 Periods)**

Working with Text

**Unit IV** **(6 Periods)**

Working with Images

**Unit V** **(6 Periods)**

Page Layout and Background

**Text Book**

DTP Course Kit, Vikas Gupta, Dreamtech Press, 2009.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Using the toolbox/Using color | **K1** |
| **CO2** | Drawing and editing objects/Creating a greeting card | **K2** |
| **CO3** | Using a template to create a two-page newsletter | **K3** |
| **CO4** | How toWork with images | **K4** |
| **CO5** | Analyze three-panel brochure for a student business | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **V** | **24UCA5SBE1B** | **SBE-I: COREL DRAW** | | | | | | | | **3** | **2** |
| **Couse outcomes** | **Programme outcomes(POs)** | | | | | **Programme Specific Outcomes(PSOs)** | | | | | **Mean scores of COs** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | |
| **CO-1** | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| **CO-2** | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| **CO-3** | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2.2 |
| **CO-4** | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| **CO-5** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| **Mean overall score** | | | | | | | | | | | **2.3 (High)** |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24UCA5SBE1C | SBE-I: INTERNETPROGRAMMING | 3 | 2 |

**Objective:**

To learn the basic of HTML and CSS.

To understand dynamic websites creation using web designing tags.

**Unit –I** **(6 Periods)**

Getting Started with HTML – Formatting Text by using Tags – using Lists and Backgrounds – Creating Hyperlinks and Anchors – Introduction to Style Sheets – Formatting Text by using Style Sheets – Formatting Paragraphs by using Style Sheets.

**Unit –II** **(6 Periods)**

Creating Tables – Formatting Tables – Creating User Forms - **The Basics of Java Script:** Overview of Java Script – Object Oriented and Java Script – General Syntactic Characteristics – Primitives, Operations, and Expressions.

**Unit –III** **(6 Periods)**

Screen Output and Keyboard Input – Control Statements – Object Creation and Modification .Java Script and XHTML Documents**:** The Java Script Execution Environment – The Document ObjectModel –Element Access in Java Script.

**Unit –IV** **(6 Periods)**

Events and Event Handling: Handling Events from Body Elements – Handling Events from Button Elements - Handling Events from Text Box and Password Elements – The DOM 2 Event Model – The Navigator Object – DOM Tree Traversal and Modification.

**Unit –V** **(6 Periods)**

Introduction To XML**:** Introduction – The Syntax of XML – XML Document Structure – Document Type Definitions – Namespaces – XML Schemas – Displaying Raw XML Documents – Displaying XML Documents With CSS – XSLT Style Sheets – XML Processors.

**TEXT BOOK(S):**

1. Faithe Wempen, HTML5 Step by Step, Microsoft Press, 2011.
2. Robert W. Sebesta, Programming the World Wide Web, Pearson Education, Fourth Edition, 2009.

**REFERENCE BOOK(S):**

1. Joel Sklar, Principles of Web Design: The Web Technologies Series, Fifth Edition, 2011.
2. www.w3schools.com

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand HTML and its tags | **K1** |
| **CO2** | To explain the working Principle of JavaScript codes | **K2** |
| **CO3** | Document object model , to create web forms | **K3** |
| **CO4** | Understand Event Handling Mechanism | **K4** |
| **CO5** | Analyze XML and stylesheets | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24UCA5SBE1C | | SBE-I: INTERNETPROGRAMMING | | | | | | | 3 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2.2 |
| CO-4 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 2 | 2 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| V | 24U5SS | SS-I: SOFT SKILL EVELOPMENT | 2 | 2 |

**Objective:**

To encourage the all round development of students by focusing on soft skills.

**Unit I** **(6 Periods)**

Know Thyself/ Understanding Self Introduction to Soft skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values.

**Unit II** **(6 Periods)**

Interpersonal Skills/ Understanding Others Developing interpersonal relationship-Team building-group dynamics-Networking Improved work relationship.

**Unit III** **(6 Periods)**

Communication Skills / Communication with others Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails-e mail etiquette.

**Unit IV** **(6 Periods)**

Corporate Skills / Working with Others Developing body language-Practising etiquette and mannerism-Time management Stress management.

**Unit V** **(6 Periods)**

Selling Self / Job Hunting Writing resume/cv-interview skills-Group discussion- Mock interview-Mock GD – Goal setting - Career planning

**TEXT BOOK(S):**

1. Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors, No, B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli- 620 002.

2. Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD,Ram Nagar, New Delhi- 110 055.Mobile No : 94425 14814 (Dr.K.Alex)

**REFERENCE BOOK(S):**

(i) Developing the leader within you John (ii) c Maxwell (ii) Good to Great by Jim Collins (iii) The seven habits of highly effective people Stephen Covey (iv) Emotional Intelligence Daniel Goleman (v) You can win Shive Khera (vi) Principle centred leadership Stephen Covey

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Become more effective individual through goal/target setting, self motivation and practicing creative thinking. | **K1** |
| **CO2** | Understand Interpersonal Relationship | **K2** |
| **CO3** | Effectively communicate through verbal/oral communication and improve the listening skills | **K3** |
| **CO4** | Time and stress management | **K4** |
| **CO5** | Develop Interview skills | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V | 24U5SS | | SS-I: SOFT SKILL EVELOPMENT | | | | | | | 2 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2.2 |
| CO-4 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 2 | 2 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6C13 | CC-XIII: FUNDAMENTALS OF REACT JS | 6 | 6 |

**Objective:**Enable participants to develop elegant and responsive Front-end by leveraging latest technologies, Build strong foundations in entry level engineers thereby making them job ready as per industry requirement

**UNIT I** **(20 Periods)**

The Foundation of React: Introduction - The Philosophy of React. JSX: JSX is Not HTML- JSX - Syntax Basics of JSX. All About Components: Components VS Elements - Built in Components - User Defined Components - Types of Components.

**UNIT II** **(20 Periods)**

All About Components: Function Components - React Component Children - The Component Life Cycle - Rendering Components.

**UNIT III** **(20 Periods)**

React Dev Tools: Installation and Getting Started - Inspecting Components -Editing Component Data in DevTools - Working With additional DeVTools Functionality - Profiling. React Data Flow: One-Way Data Flow - Probs

**UNIT IV** **(15 Periods)**

Events: Introduction - Synthetic Event- Event Listener Attributes - The Event Object - Supported Events - Event Handler Functions. Forms: Controlled Inputs vs Uncontrolled Inputs - Lifting up Input State - Uncontrolled Inputs - Different Form Elements.

**UNIT V** **(15 Periods)**

REFS: Introduction- Creating Ref in a class component - Creating Ref in a Function Component - Using Refs - Creating Callback Refs - When to use Refs- When not to use Refs. Styling React: The importance of Styles - Importing CSS into the HTML File - Using Plain Old CSS in Components - Writing Inline Styles- CSS Modules - CSS in JS and Styled Components.

**Text Book(s)**:

1. Minnick, C. (2022). Beginning ReactJS foundations building user interfaces with ReactJS: An Approachable Guide. OReillly.

Unit I - Chapter 2, Chapter 3, Chapter 4.

Unit II - Chapter 4

Unit III - Chapter 5, Chapter 6

Unit IV - Chapter 7, Chapter 8

Unit V - Chapter 9, Chapter 10

**Reference Book(s)**:

1. Alex , B., & Eve, P. (2017). Learning React: Functional Web Development with React and Redux. (1st Edition). O'Reilly Publishers.

2. Anthony, A., Nate, M., Ari, L., Clay, A., David, G., & Tyler, M.C. (2020). Full Stack React. newline.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| CO1 | Recall the fundamental concepts of React JS. | K1 |
| CO2 | Understanding the different types of Components. | K2 |
| CO3 | Discuss React Dev and their components and Tools. | K3 |
| CO4 | Analyze different Synthetic Events and its Listeners. | K4 |
| CO5 | Examine the Form Elements and its input and outputs | K5 |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6C13 | CC-XIII: FUNDAMENTALS OF REACT JS | 6 | 6 |

| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6C14 | CC-XIV: FRONT END TECHNOLOGIES | 5 | 5 |

**Objective:**

To gain knowledge on various front end tools,to design style sheets and to work with HTMl Files.

**Unit-I** **(15 Periods)**

**HTML**: Introduction – SGML – Outline of an HTML Document – Head Section – Body Section – HTML Forms.

**Unit-II** **(15 Periods)**

Java Script: Introduction – Language Elements – Objects of Java Script – Other Objects – Arrays.

**Unit-III** **(15 Periods)**

VB Script: Introduction – Embedding VBScript Code in an HTML Document – Comments – Variables – Operators – Procedures – Conditional Statements – Looping Constructs – Object and VB Script – Cookies.

**Unit-IV** **(15 Periods)**

Dynamic HTML (DHTML): Introduction – Cascading Style Sheets (CSS) – DHTML Document Object Model and Collections – Event Handling.

**Unit-V** **(15 Periods)**

Extensible Mark-Up Language (XML): Introduction – HTML vs XML – Syntax of the XML Document – XML Attributes – XML Validation – XML DTD – The Building Blocks of XML Documents – DTD Elements – DTD Attributes – DTD Entities – DTD Validation – XSL – XSL Transformation.

**Text Book(s)**:

N.P. Gopalan and J. Akilandeswari, *Web Technology – A Developer's Perspective*, Prentice Hall of India Private Ltd, New Delhi, Second Edition, 2016.

**Reference Book(s)**:

Jeffrey C. Jackson, *Web Technologies – A Computer Science Perspective*, Pearson Prentice Hall, Nineth Impression, 2011.

**Course Outcomes**

| CO NO | CO-STATEMENTS<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Understand HTML Tags and its Basics | **K1** |
| **CO2** | Understand JavaScript Elements and objects | **K2** |
| **CO3** | Better understanding of VB Script | **K3** |
| **CO4** | Usage of DHTML and style sheets | **K4** |
| **CO5** | Analyze how to work with XML documents | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6C14 | | CC-XIV: FRONT END TECHNOLOGIES | | | | | | | 5 | 5 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2.4 |
| CO-3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 1 | 2.2 |
| CO-4 | 3 | 2 | 3 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.3 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 2.2 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6C15P | CC-XV: REACT JS LAB | 6 | 3 |

**Objectives:** Enable participants to develop elegant and responsive Front-end by leveraging latest technologies ,

**List of Programs:**

1. Simple Web Page Creation **(5 Periods)**
2. Website Creation **(5 Periods)**
3. Build a Chat module **(5 Periods)**
4. Create a simple calculator Application using React JS **(5 Periods)**
5. Create a voting application using React JS **(5 Periods)**
6. Create and Build a Password Strength Check **(5 Periods)**
7. Create and Build a star rating system **(5 Periods)**
8. Create a Simple Login form using React JS **(5 Periods)**
9. Create a project on Grocery delivery application **(5 Periods)**
10. Connecting our TODO React JS Project with Firebase **(5 Periods)**

**Course Outcomes**

| CO NO | CO STATEMENT<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | Recall the fundamental concepts of React JS. | **K1** |
| **CO2** | Understanding the different types of Components. | **K2** |
| **CO3** | Discuss React Dev and their components and Tools. | **K3** |
| **CO4** | Analyze different Synthetic Events and its Listeners. | **K3** |
| **CO5** | Examine the Form Elements and its input and outputs | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6C15P | CC-XV: REACT JS LAB | | | | | | | | 6 | 3 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2.3 |
| CO-2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2.6 |
| CO-3 | 2 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2.5 |
| CO-4 | 2 | 1 | 2 | 1 | 3 | 3 | 1 | 3 | 3 | 3 | 2.2 |
| CO-5 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 1 | 3 | 2 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6MBE2A | MBE II-: WEB COMPONENT DEVELOPMENT WITH J2EE | 3 | 4 |

**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** **(20 periods)**

**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** **(20 periods)**

**STRUTS AND HIBERNATE: Struts** Architecture - Struts classes - Action Forward, Action Form, Action Servlet, Action classes -Understanding struts - config.xml, Understanding Action Mappings, Strut's flow with an example application, Struts Tiles Framework, Struts Validation Framework – Hibernate - Architecture of Hibernate - Downloading Hibernate - Exploring HQL - Understanding Hibernate O/R Mapping.

**UNIT- III** **(20 periods)**

**LAMP STACK: Overview** of Lamp Stack - Features of Lamp Stack –Understanding Python Understanding LAMP and Its Effect on Web Development

**UNIT- IV** **(15 periods)**

**.Net, C# :** Introduction - .Net revolution - .Net framework and its architecture – CLR – What is Assembly –Components of Assembly – DLL hell and Assembly Versioning. Overview to C# - C # Compilation and Execution Process – C# Fundamentals (Data types, Operators, Programming constructs) –Inheritance –Sealed Classes – Interface - Overloading – OverRiding – Method Hiding – C# Property –Exception Handling

**UNIT- V** **(15 periods)**

**ASP.NET AND SILVERLIGHT :**ASP.Net- IIS - ASP.Net Page Life Cycle – ASP Vs ASP.Net - HTML Controls Vs Server side Controls –Validation Controls – Data binding in ASP.Net – Caching – Configuration in ASP.Net (web.config) –Session management – View State in ASP.Net – ASP.Net. Introduction - RIA – Silverlight – XAML –App.Xaml – XAP – How Silverlight application executes in a web browser

**TEXT BOOK(S):**

1. James Holmes “Struts: The Complete Reference, " 2nd Edition 2007 McGraw Hill Professional
2. Patrick Peak And Nick Heudecker, Patrick Peak, Nick Heudecker Hibernate Quickly, " 2007Dreamtech

**REFERENCE BOOK(S):**

1. Subrahmanyam Allamaraju and Cedric Buest , "Professional Java Server Programming(J2EE 1.3 Edition), ", Shroff Publishers & Distributors Pvt Ltd

**Course Outcomes**

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Understand J2EE Architecture and Technologies | **K1** |
| **CO2** | Implementation of J2EE and its server | **K2** |
| **CO3** | Understand Python, Lamp | **K3** |
| **CO4** | Understand C# .net and ASP.Net | **K3** |
| **CO5** | How to develop Real time applications | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | Hours | Credits | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6MBE2A | MBE II-XIV: WEB COMPONENT DEVELOPMENT WITH J2EE | | | | | 3 | 4 | | | |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6MBE2B | MBE II-: GIS AND REMOTE SENSING | 3 | 4 |

**Objectives:** To understand the principles, applications, trends, and pertinent issues of geographical information systems and sciences, including remote sensing (RS), Photogrammetric, cartography, and global positioning systems (GPS).

**UNIT –I** **(18 Periods)**

**Introduction to Computers & GIS:** Introduction to computers, Basics of operating system: DOS and Windows; Hardware and software requirements of GIS; Graphical user interface of Arc-View and Geo-Media and Arc GIS.

**UNIT- II** **(18 Periods)**

**Data Base Creation:** Spatial data input and Geo-referencing; Spatial data base creation; Creation of non-spatial data sets into DBF format; Linking of Spatial data with non-Spatial data sets

**UNIT-III** **(18 Periods)**

**Spatial Analysis :**GIS analysis: Proximity, Thematic mapping and Over lay; 3D modeling: DEM, Slope and Aspect Overlay, buffer and proximity analysis; Output and report generation;

**UNIT-IV** **(18 Periods)**

**Principles of Remote Sensing:** Definition, types and scope of remote sensing; Stages in remote sensing data acquisition; Electromagnetic radiation and electromagnetic spectrum; Black body radiation and radiation laws; Interaction of EMR with atmosphere and Earth's surface features.

**Platforms, Sensors and Data Products :**Remote sensing platforms; Types & characteristics of sensors: IRS, LANDSAT, SPOT, IKONOS, Quick Bird; Remote sensing data products.

**UNIT-V** **(18 Periods)**

**Thermal & Microwave Remote Sensing :** Thermal Remote Sensing; Thermal properties of materials: emissivity of materials; thermal inertia of Earth surface features; Thermal data sets: LANDSAT and ASTER; Concept and Principles of microwave remote sensing; Microwave data sets SLAR. LIDAR and SAR; Application of Thermal and Microwave data.

**TEXT BOOKS**:

1. Bernhardsen (2003) Geographic Information Systems: An Introduction, 3ed, Wiley India Pvt.Ltd,New Delhi.
2. Demers (2004) *Fundamentals of Geographic Information Systems*, 3ed, Wiley India Pvt. Ltd.,New Delhi.

3. Curran,Paul J; 1985, Principles of Remote Sensing,Longman,London.

4. Estes, J.E. and LW Senger, 1974, Remote Sensing techniques for environmental Analysis,Hamilton, Santa Barbara, California.

**Course Outcomes**

On the successful completion of the course, students will be able to

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Understand the basic concept of GIS and its applications | **K1** |
| **CO2** | know different types of data representation in GIS | **K2** |
| **CO3** | Understand and Develop models for GIS spatial Analysis | **K3** |
| **CO4** | Apply knowledge of GIS software and able to work with GIS software in various application fields | **K3** |
| **CO5** | Apply knowledge of GIS and understand the integration of Remote Sensing and GIS | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6MBE2B | MBE II-: GIS AND REMOTE SENSING | | | | | | | 3 | 4 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

Prepared By Verified By HOD

| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 21UCA6MBE2C | MBE II-: MACHINE LEARNING | 3 | 4 |

**COURSE OBJECTIVES**:

- To facilitate the basics of machine learning concepts.
- To learn building a machine learning model from the scratch
- To understand the evaluation of models.

**UNIT - I:** **(18 Periods)**

Introduction: Introduction - easy for human hard for machines, a simple predicting machine, classifying is not very different from predicting, training a simple classifier, one classifier is not enough, Types of machine learning, Applications of Machine Learning, Perspectives and issues in machine learning.

**UNIT- II:** **(18 Periods)**

Probabilistic and Stochastic Models: Bayesian Learning – Bayes theorem, Concept learning, Maximum likelihood, Bayes optimal classifier, Gibbs algorithm, Naive Bayes classifier, Expectation maximization and Gaussian Mixture Models, Hidden Markov models

**UNIT-III:** **(18 Periods)**

Supervised learning: Introduction, Regression, Linear regression, Classification: Decision trees, k-Nereast Neighbours, Support Vector Machine, Logistic regression, Random Forest. Artificial Neural Network: Introduction, Perceptrons, multi-layer networks and back propagation.

**UNIT-IV:** **(18 Periods)**

Unsupervised learning: Introduction, Supervised vs Unsupervised Cluster Analysis, K-means clustering, Hierarchical clustering. Dimension reduction: Principal Component Analysis, Linear Discriminant Analysis

**UNIT-V:** **(18 Periods)**

Modelling and evaluation: Building the model, Training a model, evaluating a model, improving a model. Performance metrics - accuracy, precision, recall, sensitivity, specificity, AUC, RoC, Bias Variance decomposition.

**TEXT BOOK(S)**


1. C. Bishop, “Pattern Recognition and Machine Learning”, Springer.
2. Ethem Alpaydin,"Introduction to Machine Learning”, MIT Press, Prentice Hall of India, Third Edition 2014. (Unit2: Chapter 7, Chapter 15)

**REFERENCE BOOK(S)**


1. Sebastian Raschka and Vahid Mirjalili, “Python Machine Learning”, Packt Publishing, Third Edition, 2019
2. Ethem Alpaydin,"Introduction to Machine Learning”, MIT Press, Prentice Hall of India, Third Edition 2014. (Unit2: Chapter 7, Chapter 15)


**Course Outcomes**

On the successful completion of the course, students will be able to

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Explain machine learning | **K1** |
| **CO2** | Apply machine learning concepts in various domains | **K2** |
| **CO3** | Implement supervised, unsupervised learning techniques | **K3** |
| **CO4** | Differentiate supervised and unsupervised learning techniques | **K3** |
| **CO5** | Create and evaluate models | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 21UCA6MBE2C | MBE II-: MACHINE LEARNING | | | | | | | | 3 | 4 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6SBE2A | SBE II-: DREAM WEAVER | 3 | 2 |

**Objective:**

To create personal and/or business websites following current professional and/or industry standards.

**Unit-I** **(6 Periods)**

Introduction to Dreamweaver CS4, Working with Dreamweaver Websites.

**Unit-II** **(6 Periods)**

Working with Web Pages, Working with HTML Tables, Framesets and Frames.

**Unit III** **(6 Periods)**

Introduction to Cascading Style Sheets.

**Unit IV** **(6 Periods)**

Working with Templates, Working with Flash Contents and HTML Forms.

**Unit V** **(6 Periods)**

Working with JavaScript, Finalizing the Site.

**Text Book:**

Dreamweaver CS4 in Simple Steps, Kogent Learning Solutions Inc, Dreamtech Press, 2010

**Course Outcomes**

On the successful completion of the course, students will be able to

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Use Adobe Dreamweaver to create personal and/or business websites following current professional and/or industry standards. | **K1** |
| **CO2** | Use critical thinking skills to design and create a basic, multi-page website | **K2** |
| **CO3** | Use Adobe Dreamweaver and a stand-alone FTP program to upload files to a web server | **K3** |
| **CO4** | Understand about templates and stylesheets | **K3** |
| **CO5** | design and develop website | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6SBE2A | | SBE II-: DREAM WEAVER | | | | | | | 3 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6SBE2B | SBE II-:XML PROGRAMMING | 3 | 2 |

**Objective:**
To create personal and/or business websites following current professional and/or industry standards

**UNIT I:** **(6 Periods)**

Getting a Global Perspective: The early beginnings – The Current Standards-XML Software.Reviewing XML Validating and Non-validating Parsers: Getting XML Documents Written – XML Non-validating Parsers -Validating Parsers. Saying "Hello World" in XML: XML structure, XML elements, writing your first document, passing your document- using layers of elements- commenting your XML code-Datastructure and organization.

**UNIT II:** **(6 Periods)**

Organizing XML Data: Creating Layers of information from your data – Structuring your data-Ensuring that your data works with the Document Object Model (DOM). Creating Well-Formed XML: Document Basics – Creating and Describing Elements – Child Elements. Adding Attributes: Using attributes to Enhance Elements – Attribute rules - Using attributes to Enhance empty Elements- Sharing attributesUsing style sheet with attributes.XML Namespaces: What are Namespaces?- Using Namespaces within Documents- Adding name space to DTDs.

**UNIT III:** **(6 Periods)**

Validating your XML Documents: DTDs and validation – Adding DTDs to your Documents – PUBLIC Versus SYSTEM DTDs – declaring Element types –Controlling element content – adding comments. Defining DTD Entities: Understanding Entities – Defining General Entities – Defining parameters entities

**UNIT IV:** **(6 Periods)**

Working with Attributes: Delving into attributes – attribute or element? – defining attributes- defining multiple attributes – using predefined attributes.Introducing Schemas: What are schemas?- Comparing DTDs and schema – Writing a basic schema –What software is available?

**UNIT V:** **(6 Periods)**

Scheme Elements, Types and Groups: Schema element Descriptions – Element Types- Using Groups of elements- Element content.Defining Schema Attributes: Schema attributes description –using schema annotations – using constraints- creating unique elements and attributes.Advanced Concepts with

Schema: Target namespaces and schemas – undeclared target namespaces – schema constraints versus ID attributes- global VS local declarations- using schemas as Multiple documents- Substitution groups- abstract elements and types.

**Text Book(s):**

1. Heather Williamson, ―XML:The Complete Reference‖, McGraw-Hill, 1st Edition, 2001.

**Reference Book(s):**

1. William R.Stanek , ―XML Pocket Consultant‖, Prentice Hall, 1 st Edition, 2002.

2. Sandra E.Eddy& John E.Schnyder ―Teach Yourself XML‖, IDG Books India (P) Ltd, 2nd Edition, 2002.

**Course Outcomes**

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Understand the basics of XML | **K1** |
| **CO2** | Can create XML documents using DOM | **K2** |
| **CO3** | Can validate XML document using DTD | **K3** |
| **CO4** | Understand the concepts of Attributes and Schema | **K3** |
| **CO5** | Understand the concepts of Types and Groups | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6SBE2B | | SBE II-:XML PROGRAMMING | | | | | | | 3 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24UCA6SBE2C | SBE II-: DIGITAL MARKETING | 3 | 2 |

**Objectives:** To understand about the social media and its importance for marketing success. To understand the process of integration of different digital media and create marketing content.

**UNIT - I**: **(6 Periods)**

**Digital marketing overview-** what is Digital Marketing, traditional marketing vs. Digital Marketing, understanding traffic, categorization of digital marketing for the business, Legal and Ethical issues, search engine optimization (SEO)- on page optimization, off page optimization. Goals: learn how to use dozens of proven digital marketing strategies.

**UNIT - II:** **(6 Periods)**

**Social Media overview-** Social Media features, social media tools and platforms, Social Media monitoring, Hashtag, viral content. **Social media marketing** - SMM vs. SMO benefits of using SMM social media strategy, Email marketing

**UNIT - III:** **(6 Periods)**

**Social media marketing -** Facebook marketing-profiles and pages, business categories, Facebook page custom URL, invite page likes, scheduling posts, Facebook events, Facebook insights reports, competitor's Facebook page, connect with twitter. Facebook ad campaigns- ad objective, performance matrix, ad components, Facebook ad structure, Facebook insights, Facebook page promotion, video promotion. Goals: develop a Facebook campaign for the product concept.

**UNIT - IV**: **(6 Periods)**

**Google Ads-** Introduction to Ad words, keyword planner, Pay-Per-Click(PPC), PPC terminology, PPC AD on Google Facebook. Goals: Use social media to keep abreast of the latest trends in your industry.

**UNIT - V:** **(6 Periods)**

Content Marketing and security, Security for SMM, Social Media Privacy, Secure Payments and Website Encryption, Cookies, VPN, Digital Certificate, E-Governance, E-wallet,. Goals: Understand security issues related to social media and digital marketing.

**Text Book(s):**

1.Ryan Deiss, Russ Henneberry (2017) Digital Marketing for Dummies, John Wiley & Sons.

2.Ahuja Vandana (2015) Digital Marketing, Oxford University Press.

3.Ira Kaufman, Chris Horton (2014) Digital Marketing: Integrating Strategy and Tactics with Values, A Guidebook for Executives, Managers, and Students, Routledge,

4. Matt Chiera (2018) Digital Marketers Sound Off: Tips, Tactics, Tools, and Predictions from 101 Digital Marketing Specialists, Matt Chiera,

**Reference Book(s):**

1.Puneet Bhatia (2017) Fundamentals of Digital Marketing, Pearson India, ISBN 9352861418, 9789352861415

2. Dan Zarrella (2011) The Social Media Marketing Book, O'Reilly Media.

3. Krista Neher (2013) Visual Social Media Marketing: Harnessing Images, Instagram, Infographics and Pinterest to Grow Your Business Online, Boot Camp Digital.

**Course Outcomes**

On the successful completion of the course, students will be able to

| CO NO | CO STATEMENT | Knowledge Level (K-Levels) |
|---|---|---|
| | On the Successful completion of the course the student would be able to | |
| **CO1** | Identify importance of the social media marketing for marketing success | **K1** |
| **CO2** | Use principles of consumer and social psychology to develop social media content and campaigns that engage consumers | **K2** |
| **CO3** | Measure the impact of a social media campaign in terms of a specific marketing objective. | **K3** |
| **CO4** | Demonstrate to create a blog and a social media marketing plan for a new product or service. | **K3** |
| **CO5** | Draw on knowledge about word-of-mouth marketing to develop effective approaches for propagating ideas, messages, products, and behaviors across social networks | **K3** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | | Title of the Course | | | | | | | Hours | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VI | 24UCA6SBE2C | | SBE II-: DIGITAL MARKETING | | | | | | | 3 | 2 |
| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| CO-1 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 2 | 3 | 2.5 |
| CO-2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| CO-3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| CO-4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| CO-5 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| Mean overall score | | | | | | | | | | | 2.3 (High) |

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| Semester | Course code | Title of the course | Hours | Credits |
|---|---|---|---|---|
| VI | 24U6GS | GS II-: GENDER STUDIES | 1 | 1 |

**Objectives:**To make boys and girls aware of each others strengths and Weakness.To develop sensitivity towards both genders in order to lead an ethically enriched life.To promote attitudinal change towards a gender balanced ambience and women empowerment .

**Unit – I** **(4 Periods)**

Concepts of Gender: Sex – Gender – Biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of labour – Gender Stereotyping – Gender Sensitivity – Gender Equity – Equality – Gender Mainstreaming - Empowerment.

**Unit – II** **(4 Periods)**

Women's Studies vs Gender Studies : UGC's Guidelines – VII to XI Plans – Gender Studies : Beijing Conference and CEDAW – Exclusiveness and Inclusiveness.

**Unit – III** **(4 Periods)**

Areas of Gender Discrimination : Family – Sex Ratio – Literacy – Health – Governance – Religion Work Vs Employment – Market – Media – Politics – Law – Domestic Violence – Sexual Harassment – State Policies and Planning .

**Unit – IV** **(4 Periods)**

Women Development and Gender Empowerment : Initiatives – International Women's Decade – International Women's Year – National Policy for Empowerment of Women – Women Empowerment Year 2001 – Mainstreaming Global Policies .

**Unit – V** **(4 Periods)**

Women's Movements and Safeguarding Mechanism : In India National /State Commission for Women(NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73rd and 74th Amendment for PRIS

**.REFERENCE BOOK(S):**


1. Bhasin Kamala, Understanding Gender : Gender Basics , New Delhi : Women Unlimited , 2004
2. Bhasin Kamala, Exploring Masculinity: Gender Basics , New Delhi: Women Unlimited ,2004
3. Bhasin Kamala , What is Patriarchy? : Gender Basics, New Delhi :Women Unlimited ,1993

**Course Outcomes**

On the successful completion of the course, students will be able to

| CO NO | CO STATEMENT<br>On the Successful completion of the course the student would be able to | Knowledge Level (K-Levels) |
|---|---|---|
| **CO1** | identify and analyze the links among gender, sexuality, identity, power, and social justice | **K1** |
| **CO2** | Identify and analyze intersections among gender | **K2** |
| **CO3** | Understand and analyze forces shaping individual experiences as well as social structure and institutions such as the family, workplace, and media | **K3** |
| **CO4** | Understand Women Development and Gender Empowerment | **K4** |
| **CO5** | Women's Safeguarding Mechanism | **K5** |

**Relationship matrix for Course outcomes, Programme outcomes/ Programme specific outcomes**

**Mapping with Programme Outcomes:**

| Semester | Course code | Title of the Course | Hours | Credits |
|---|---|---|---|---|
| **VI** | **24U6GS** | **GS -: GENDER STUDIES** | **1** | **1** |

| Couse outcomes | Programme outcomes(POs) | | | | | Programme Specific Outcomes(PSOs) | | | | | Mean scores of COs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | |
| **CO-1** | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 2.5 |
| **CO-2** | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2.5 |
| **CO-3** | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2.2 |
| **CO-4** | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 1 | 2 | 2.2 |
| **CO-5** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 1 | 2.3 |
| **Mean overall score** | | | | | | | | | | | **2.3 (High)** |

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