

**NALLAMUTHU GOUNDER MAHALINGAM COLLEGE**  
**(AUTONOMOUS)**  
**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**UNDER CBCS PATTERN GUIDED BY UNIVERSITY AND TANSCH**  
**(FOR THOSE WHO ADMITTED FROM THE ACADEMIC YEAR 2014-2015 ONWARDS)**

| S. No        | COURSE CODE             | COURSE TITLE                                               | Lecture+Tutorial/Practical Hours/week | Max. Marks           |          |                 |       | Credit Point |
|--------------|-------------------------|------------------------------------------------------------|---------------------------------------|----------------------|----------|-----------------|-------|--------------|
|              |                         |                                                            |                                       | Duration of Exam Hrs | Internal | End-of-Semester | TOTAL |              |
| SEMESTER I   |                         |                                                            |                                       |                      |          |                 |       |              |
| I            | 14UTL01                 | TAMIL - I                                                  | 6                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 12UHN01                 | HINDI - I                                                  |                                       |                      |          |                 |       |              |
| II           | 13UEN01                 | ENGLISH - I                                                | 5                                     | 3                    | 25       | 75              | 100   | 3            |
| III          | 14UCT01                 | CORE I: C PROGRAMMING                                      | 4                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT02                 | CORE II: DIGITAL COMPUTER FUNDAMENTALS                     | 4                                     | 3                    | 25       | 75              | 100   | 4            |
|              | 14UCT03                 | ALLIED I: MATHEMATICAL STRUCTURE FOR COMPUTER SCIENCE      | 5                                     | 3                    | 25       | 75              | 100   | 5            |
|              | 14UCT04                 | PROGRAMMING LAB - I ('C')                                  | 4                                     | 3                    | 20       | 30              | 50    | 2            |
| IV           |                         | ENVIRONMENTAL STUDIES                                      | 1                                     | ..                   | ..       | ..              | ..    | ..           |
|              | 14HEC01                 | HUMAN EXCELLENCE-PERSONAL VALUES & SKY YOGA PRACTICE-I     | 1                                     | 2                    | 25       | 25              | 50    | 1            |
| V            |                         | EXTENSION ACTIVITIES (NSS/NCC/SPORTS AND GAMES)            | Grading Only                          |                      |          |                 |       |              |
| TOTAL        |                         |                                                            | 30                                    |                      |          |                 | 600   | 21           |
| SEMESTER II  |                         |                                                            |                                       |                      |          |                 |       |              |
| I            | 14UTL02                 | TAMIL - II                                                 | 6                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 12UHN02                 | HINDI - II                                                 |                                       |                      |          |                 |       |              |
| II           | 13UEN02                 | ENGLISH - II                                               | 5                                     | 3                    | 25       | 75              | 100   | 3            |
| III          | 14UCT05                 | CORE III: OBJECT ORIENTED PROGRAMMING WITH 'C++'           | 4                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT06                 | CORE IV: DATA STRUCTURES                                   | 4                                     | 3                    | 25       | 75              | 100   | 4            |
|              | 14UCT07                 | ALLIED II: DISCRETE MATHEMATICS                            | 4                                     | 3                    | 25       | 75              | 100   | 5            |
|              | 14UCT08                 | PROGRAMMING LAB - II (C++)                                 | 4                                     | 3                    | 20       | 30              | 50    | 2            |
| IV           | 08EVS01                 | ENVIRONMENTAL STUDIES                                      | 1                                     | 2                    | ..       | 50              | 50    | 2            |
|              | 14HEC02                 | HUMAN EXCELLENCE - FAMILY VALUES & SKY YOGA PRACTICE - II  | 1                                     | 2                    | 25       | 25              | 50    | 1            |
|              | 12UHR01                 | HUMAN RIGHTS                                               | 1                                     | 2                    |          | 50              | 50    | 2            |
| V            |                         | EXTENSION ACTIVITIES (NSS/NCC/SPORTS AND GAMES)            | Grading Only                          |                      |          |                 |       |              |
| TOTAL        |                         |                                                            | 30                                    |                      |          |                 | 700   | 25           |
| SEMESTER III |                         |                                                            |                                       |                      |          |                 |       |              |
| III          | 14UCT09                 | CORE V: JAVA PROGRAMMING                                   | 5                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT10                 | CORE VI: RDBMS AND ORACLE                                  | 5                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT11                 | CORE VII: OPERATING SYSTEMS                                | 5                                     | 3                    | 25       | 75              | 100   | 5            |
|              | 14UCT12                 | ALLIED III: COMPUTER SYSTEM ARCHITECTURE                   | 5                                     | 3                    | 25       | 75              | 100   | 5            |
|              | 14UCT13                 | PROGRAMMING LAB - III (JAVA)                               | 4                                     | 3                    | 20       | 30              | 50    | 2            |
|              | 14UCT14                 | PROGRAMMING LAB - IV (RDBMS and ORACLE)                    | 4                                     | 3                    | 20       | 30              | 50    | 2            |
| IV           | 14HEC03                 | HUMAN EXCELLENCE - PROFESSIONAL VALUES & SKY YOGA PRACTICE | 1                                     | 2                    | 25       | 25              | 50    | 1            |
|              | 14UCTNA01/<br>14UCTNB01 | SKILL BASED NON- MAJOR ELECTIVE I                          | 1                                     | 2                    |          | 50              | 50    | 2            |
| V            |                         | EXTENSION ACTIVITIES (NSS/NCC/SPORTS AND GAMES)            | Grading Only                          |                      |          |                 |       |              |
| TOTAL        |                         |                                                            | 30                                    |                      |          |                 | 600   | 23           |
| SEMESTER IV  |                         |                                                            |                                       |                      |          |                 |       |              |
| III          | 14UCT15                 | CORE VIII: WEB TECHNOLOGY (PHP and MySQL)                  | 5                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT16                 | CORE IX: WEB DESIGNING (HTML, DHTML, XML, JavaScript)      | 5                                     | 3                    | 25       | 75              | 100   | 3            |
|              | 14UCT17                 | CORE X: DATA COMMUNICATION AND NETWORKS                    | 5                                     | 3                    | 25       | 75              | 100   | 4            |
|              | 14UCT18                 | ALLIED IV: MICROPROCESSOR AND ALP                          | 5                                     | 3                    | 25       | 75              | 100   | 5            |

|                    |                         |                                                            |     |   |    |    |      |     |
|--------------------|-------------------------|------------------------------------------------------------|-----|---|----|----|------|-----|
|                    | 14UCT19                 | PROGRAMMING LAB - V (WEB TECHNOLOGY)                       | 4   | 3 | 20 | 30 | 50   | 2   |
|                    | 14UCT20                 | PROGRAMMING LAB - VI (WEB DESIGNING)                       | 4   | 3 | 20 | 30 | 50   | 2   |
| IV                 | 14HEC04                 | HUMAN EXCELLENCE - SOCIAL VALUES & SKY YOGA PRACTICE - IV  | 1   | 2 | 25 | 25 | 50   | 1   |
|                    | 14UCTNA02/<br>14UCTNB02 | SKILL BASED NON-MAJOR ELECTIVE II                          | 1   | 2 |    | 50 | 50   | 2   |
| V                  |                         | NSS/NCC/SPORTS AND GAMES                                   |     |   | 50 |    | 50   | 1   |
| <b>TOTAL</b>       |                         |                                                            | 30  |   |    |    | 650  | 23  |
| <b>SEMESTER V</b>  |                         |                                                            |     |   |    |    |      |     |
| III                | 14UCT21                 | CORE XI: J2EE TECHNOLOGIES                                 | 5   | 3 | 25 | 75 | 100  | 3   |
|                    | 14UCT22                 | CORE XII: COMPUTER GRAPHICS                                | 5   | 3 | 25 | 75 | 100  | 3   |
|                    | 14UCT23                 | CORE XIII: CLOUD COMPUTING                                 | 5   | 3 | 25 | 75 | 100  | 5   |
|                    | 14UCT24                 | ELECTIVE I                                                 | 5   | 3 | 25 | 75 | 100  | 5   |
|                    | 14UCT25                 | PROGRAMMING LAB -VII (J2EE TECHNOLOGIES)                   | 4   | 3 | 40 | 60 | 100  | 2   |
|                    | 14UCT26                 | PROGRAMMING LAB - VIII (GRAPHICS AND MULTIMEDIA)           | 4   | 3 | 40 | 60 | 100  | 2   |
| IV                 | 14HEC05                 | HUMAN EXCELLENCE - NATIONAL VALUES & SKY YOGA PRACTICE - V | 1   | 2 | 25 | 25 | 50   | 1   |
|                    | 08GKL01                 | GENERAL KNOWLEDGE AND GENERAL AWARENESS                    | SS  | 2 |    | 50 | 50   | 2   |
|                    | 14UCTSA01/<br>14UCTSB01 | SKILL BASED MAJOR ELECTIVE I                               | 1   | 2 |    | 50 | 50   | 2   |
| <b>TOTAL</b>       |                         |                                                            | 30  |   |    |    | 750  | 25  |
| <b>SEMESTER VI</b> |                         |                                                            |     |   |    |    |      |     |
| III                | 14UCT27                 | CORE XIV: VB .NET PROGRAMMING                              | 6   | 3 | 25 | 75 | 100  | 3   |
|                    | 14UCT28                 | ELECTIVE-II                                                | 6   | 3 | 25 | 75 | 100  | 5   |
|                    | 14UCT29                 | ELECTIVE-III                                               | 6   | 3 | 25 | 75 | 100  | 5   |
|                    | 14UCT30                 | PROGRAMMING LAB- IX (VB .NET PROGRAMMING)                  | 5   | 3 | 40 | 60 | 100  | 2   |
|                    | 14UCT31                 | INDUSTRY ORIENTED PRACTICALS                               | 5   | 3 | 60 | 40 | 100  | 5   |
| IV                 | 14HEC06                 | HUMAN EXCELLENCE - GLOBAL VALUES & SKY YOGA PRACTICE - VI  | 1   | 2 | 25 | 25 | 50   | 1   |
|                    | 14UCTSA02/<br>14UCTSB02 | SKILL BASED MAJOR ELECTIVE II                              | 1   | 2 |    | 50 | 50   | 2   |
| <b>TOTAL</b>       |                         |                                                            | 30  |   |    |    | 600  | 23  |
| <b>TOTAL</b>       |                         |                                                            | 180 |   |    |    | 3900 | 140 |

#### LIST OF MAJOR ELECTIVE PAPERS

|              |                                        |
|--------------|----------------------------------------|
| ELECTIVE -I  | A. Software Engineering                |
|              | B. Distributed Computing               |
|              | C. Digital Image Processing            |
| ELECTIVE -II | A. Embedded Systems                    |
|              | B. Animation Techniques                |
|              | C. Computer Installation and Servicing |
| ELECTIVE -II | A. Information Security                |
|              | B. Mobile Computing                    |
|              | C. Data Mining                         |

#### LIST OF SKILL-BASED ELECTIVE PAPERS

|                             |                                  |
|-----------------------------|----------------------------------|
| ELECTIVE -I<br>(NON-MAJOR)  | A. Introduction to HTML          |
|                             | B. Multimedia Fundamentals       |
| ELECTIVE -II<br>(NON-MAJOR) | A. Internet and Web Technologies |
|                             | B. Coreldraw                     |
| ELECTIVE -I<br>(MAJOR)      | A. Visual Basic                  |
|                             | B. Flash                         |
| ELECTIVE -II<br>(MAJOR)     | A. DreamWeaver                   |
|                             | B. Photoshop                     |

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                            |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Effective From the Year:</b><br>2014-15 |
| <b>Subject Code &amp; Title</b> | 14UCT01 & C PROGRAMMING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Semester:</b><br>I                      |
| <b>Hrs/Week:</b>                | 4Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To develop programming skills using C language.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | Program Development Methodologies - Programming Style – Problem Solving Techniques - Algorithm, Flowcharts, Pseudo code - Structure of a C Program. <b>The C Declarations:</b> The C character set - Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and Initializing Variables – Type Conversion - Operators and Expressions.                                                                                                                          | 10                                         |
| <b>Unit II</b>                  | <b>Input and Output in C:</b> Formatted and Unformatted I/O functions. <b>Decision Statements:</b> If- If...Else- Nested If-else - break- continue – goto – Switch - Nested switch () Case - The Switch () Case and Nested If Statements. <b>Loop Control Statements:</b> For, Nested For, While, Do-while- the Do-While statement with While Loop.                                                                                                                                                                         | 11                                         |
| <b>Unit III</b>                 | <b>Arrays:</b> Initialization - Definition – Characteristics - One-dimensional - Predefined Streams - Two-Dimensional - Three or Multi-Dimensional Arrays – scanf () and printf () Functions. <b>Strings:</b> Declaration and Initialization – Displaying Standard Functions and Applications. <b>Pointers:</b> Features - Declarations - Arithmetic Operations with Pointers - Pointers and Arrays, Pointers and Two Dimensional Arrays - Array of Pointers - Pointers to Pointers - Pointers and Strings - Void Pointers. | 10                                         |
| <b>Unit IV</b>                  | <b>Functions:</b> Definition – Declaration - Return Statements – Types - Call by Value and Reference - Returning more multiple values - Function as an Argument - Function with Arrays and Pointers - Recursion.                                                                                                                                                                                                                                                                                                            | 10                                         |

|               |                                                                                                                                                                                                                                                                                                                                                            |    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|               | <b>Structure and Union:</b> Features - Declaration and Initialization of Structure - Structure within Structure - Array of Structures - Pointer to Structures - Structure and Functions - Typedef - Bit fields - Enumerated Data Type – Union - Union of Structures.                                                                                       |    |
| <b>Unit V</b> | <b>Files:</b> Streams and File Types - Steps for File Operation - File I/O - Structures Read and Write - Other File Function - Searching errors in Reading/Writing Files - Low Level Disk I/O - Command Line Arguments - I/O Redirection. <b>Preprocessor Directives:</b> #define - #include - #ifndef - #error - #line - #pragma - and Predefined Macros. | 11 |

#### Text Book:

1. Ashok N Kamthane, “Programming and Data Structures” – Pearson Education, First Indian Print 2004, ISBN: 81-297-0327-0.

#### Reference Books:

1. Pradip Dey, Manas Ghosh, “Computer Fundamentals and Programming in C”, Oxford, 2008.
2. E.Karthikeyan, “A Text Book on C – Fundamentals, Data Structures and Problem Solving”, Prentice-Hall, 2008, ISBN: 978-81-203-3424-3.
3. Yashavant Kanetkar, “Let Us C”, BPB Publications, 13th Edition, 2012, ISBN-13: 9788183331630.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                            |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Effective From the Year:</b><br>2014-15 |
| <b>Subject Code &amp; Title</b> | 14UCT02 & DIGITAL COMPUTER FUNDAMENTALS                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Semester:</b><br>I                      |
| <b>Hrs/Week:</b>                | 4Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Credit:</b> 4                           |
| <b>Objectives</b>               | To convey the knowledge on digital circuits, Logic Gates and about interfacing of various components.                                                                                                                                                                                                                                                                                                                                                                      |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Number Systems and Binary Codes:</b> Digital Electronics – Integrated circuits or Chip - Decimal System - Binary system – Octal System – Hexadecimal System – Binary addition – Binary Multiplication and Division – Double precision Numbers - Floating Point Representation – 1's Complement of a binary Number - BCD – Excess-3 Code – Gray Code – Alphanumeric codes – Weighted Codes – Parity method for error detection and correction                            | 10                                         |
| <b>Unit II</b>                  | <b>Boolean Algebra-Logic Gates– Karnaugh Map and Minimization:</b> Boolean Algebra – Gates – Inverter or NOT Gate – OR Gate – AND Gate – NOR Gate – NAND Gate – De Morgan's Theorems – Exclusive OR Gate – Exclusive NOR Gate – Karnaugh Map – Canonical Form I – Karnaugh Map - Construction and Properties – Implicants – Don't Care Combinations – Irredundant expressions – Minimization of SOP form using Karnaugh map - Minimization of POS form using Karnaugh map. | 11                                         |
| <b>Unit III</b>                 | <b>Arithmetic and Logic circuits:</b> Arithmetic and Logic circuits – Half Adder – Full Adder – Parallel Binary Adders – BCD Adder – 2's Complement Adder – Half-Subtractor – Full-Subtractor – Parallel Binary Subtractors – 2's Complement Subtractor – 2's Complement Adder/Subtractor – Binary Multiplier – Binary Divider – Comparator.                                                                                                                               | 10                                         |
| <b>Unit IV</b>                  | <b>Sequential Circuits, Flip-Flops:</b> Sequential circuits – Flip-Flops – R-S Flip-Flops – Clock Signals – Clocked R-S Flip-Flop – Data Latch or                                                                                                                                                                                                                                                                                                                          | 10                                         |

|               |                                                                                                                                                                                                                                                                                                                       |    |
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|               | D-Flip-Flop –Clocked Data Latch – Positive Edge Triggered Data Flip-Flop - Positive Edge Triggered J-K Flip-Flop - T Flip-Flop – Master-Slave J K Flip-Flop. <b>Registers:</b> Registers – Shift registers – Shift-left Register - Shift-Right Register – Decoder – Encoder – Multiplexer – Demultiplexer.            |    |
| <b>Unit V</b> | <b>Counters:</b> Counters – Ring Counter – Synchronous Up/Down Counter – Programmable Counter. <b>Semiconductor memories:</b> Memory Unit – Concept of Memory Using Registers – Read Only Memories – Random Access Memories – Programmable Array Logic(PAL) – Programmable Logic Arrays(PLA) – Buffer – Cache Memory. | 11 |

**Text Book:**

1. Puri.V.K, “Digital Electronics Circuits and Systems”, TATA Mc-Graw Hill, 22<sup>nd</sup> Reprint 2011, ISBN-10: 0-07-463317-1.

**Reference Books:**

1. Donald P Leach, Albert Paul Malvino, Gautam Saha, “Digital Principles and Applications”, TATA McGraw-HILL Publications, 6<sup>th</sup> Edition, 1994.
2. S K Mandal, “Digital Electronics: Principles and Applications”, 1<sup>st</sup> Edition, 2010, ISBN-13: 9780070153820.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                           |                                            |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                   | <b>Effective From the Year:</b><br>2014-15 |
| <b>Subject Code &amp; Title</b> | 14UCT03 & MATHEMATICAL STRUCTURE FOR COMPUTER SCIENCE                                                                                                                                                                                                                         | <b>Semester:</b><br>I                      |
| <b>Hrs/Week:</b>                | 5Hrs                                                                                                                                                                                                                                                                          | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | <p>To teach the concepts of Matrices, Algebraic Equations, Numerical Differentiation and Integration.</p> <p>To make the students to learn the applications of statistical and numerical methods for Computer Applications.</p>                                               |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Matrices</b> – Introduction – Determinants – Inverse of a matrix – Rank of a Matrix – Eigen value Problems.                                                                                                                                                                | 10                                         |
| <b>Unit II</b>                  | <b>System of Simultaneous Linear algebraic Equation:</b> Gauss elimination, Gauss Jordan, Gauss Seidel methods. <b>The solution of Numerical Algebraic and Transcendental equation</b> – Bisection method – Newton Raphson method – False position method.                    | 11                                         |
| <b>Unit III</b>                 | <b>Numerical Differentiation:</b> Newton's forward Difference - Backward Difference – <b>Startling formula Numerical Integration:</b> Trapezoidal Rule and Simpson's rule - <b>Numerical solution of ordinary differential equations:</b> Taylor method & Runge-kutta method. | 10                                         |
| <b>Unit IV</b>                  | <b>Measures of central tendency:</b> Mean, Median and Mode – Relationship among mean, median and mode. <b>Measures of dispersion:</b> Range, quartile deviation, mean deviation and Standard deviation.                                                                       | 10                                         |
| <b>Unit V</b>                   | <b>Correlation:</b> Karl Pearson's coefficient of correlation – <b>Rank correlation regression:</b> Regression Equations – Difference between Correlation and Regression.                                                                                                     | 11                                         |

#### Text Books:

1. Dr. Venkataraman. M. K, "Engineering Mathematics Volume II", Third Edition, NPC – (Unit I).

2. Kandasamy. P, Thilagavathi. K, Gunavathi. K, “Numerical Methods”, S. Chand and Company Ltd, New Delhi, Revised Edition 2006, ISBN-13: 9788121914383. (Unit II & III).
3. Pillai.R.S.N, Bagavathi.V, “Statistical Methods”, Sultan Chand and Sons Company limited, New Delhi, Reprint 2005 - (Unit IV & V).

**Reference Books:**

1. BalaGurusamy .E, “Numerical methods”, Tata MC-Graw Hill, First Edition, 1999, ISBN-13:9780074633113.
2. Gupta .S.C, Kapoor .V.K, “Fundamental of Mathematical statistics”, Sultan Chand and Sons , 2007, ISBN-13:9788180540042.

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**Department of Computer Technology**  
**PROGRAMMING LAB - I ("C")**  
**Semester I**

**Subject Code: 14UCT04**

**Credit: 2**  
**Total Hrs: 52**

**Objective:** On successful completion of this subject the students should have:

- developed the skills to write programs in C.

1. Create a C program to find the Greatest of three numbers.
2. Create a C program to display the Fibonacci series.
3. Create a C program to generate the Armstrong number.
4. Create a C program to generate the Prime number.
5. Create a C program to calculate the Sum of individual digits.
6. Create a C program to calculate Sum of n numbers.
7. Create a C program to arrange the numbers in Ascending order & Descending order.
8. Create a C program to display the given string in Alphabetic order.
9. Create a C program to check the Palindrome.
10. Create a C program to calculate the mean, median & mode.
11. Create a C program to calculate the Standard deviation & variance.
12. Create a C program to calculate the Rank correlation.
13. Create a C program to perform the Matrix addition.
14. Create a C program to perform the Matrix multiplication.
15. Create a C program to perform the Transpose of a Matrix.
16. Create a C program using structures.
17. Create a C program using Pointers.
18. Create a C program to find the nCr using functions.
19. Create an Employee file program using the sequential File operations.
20. Create a C program to find the Vowel count in a text file.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                             |                                              |
| <b>Course</b>                   | B.Sc C.T                                                                                                                                                                                                                                                                                                                                                        | <b>Effective From the Year:</b><br>2014 - 15 |
| <b>Subject Code &amp; Title</b> | 14UCT05 & OBJECT-ORIENTED PROGRAMMING WITH C++                                                                                                                                                                                                                                                                                                                  | <b>Semester:</b><br>II                       |
| <b>Hrs/Week:</b>                | 4 Hrs                                                                                                                                                                                                                                                                                                                                                           | <b>Credit:</b> 3                             |
| <b>Objectives</b>               | To develop the programming ability in C++ by knowing the OOPS concepts like Encapsulation, Abstraction, Inheritance, Polymorphism, Exception handling etc.                                                                                                                                                                                                      |                                              |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                  | <b>Hrs</b>                                   |
| <b>Unit I</b>                   | Introduction to C++ - key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations - Control Structures - Decision Making and Statements : If - else ,jump, Goto, break, continue, Switch case statements – Loops in C++ : For, While, Do - Functions in C++ - Inline functions – Function Overloading. | 10                                           |
| <b>Unit II</b>                  | Classes and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions – Bit fields and Class – Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static members.                  | 10                                           |
| <b>Unit III</b>                 | Operator Overloading: Overloading unary, binary operators – Overloading with Friend function – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchical, Hybrid, Multipath inheritance – Virtual base Classes – Abstract Classes.                                                                                       | 10                                           |
| <b>Unit IV</b>                  | Pointers: Declaration – Pointer to Class, Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic objects – Binding , Polymorphism and Virtual Functions.                                                                                       | 12                                           |
| <b>Unit V</b>                   | Files: File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling.                                                                                                                                                                                               | 10                                           |

**Text Book:**

1. Ashok N Kamthane, “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education publication, 2003, ISBN-13:9788131703830.

**Reference Books:**

1. BalaGurusamy.E, “Object Oriented Programming with C++”, TMH Publication, 1998, ISBN-13: 9781259062216.
2. Maria Litvin and Gary Litvin: “C++ for you”, Vikas Publication, 2002, ISBN-13: 9788125912026.
3. John R Hubbard, “Programming with C++”, TMH Publication, 2<sup>nd</sup> Edition, 2002, ISBN-13: 9780071353465.
4. Bhushan Trivedi, “Programming with Ansi C++”, Oxford University Press. 2007, ISBN-13: 9780198063087.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                  |                                              |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                                                                                          | <b>Effective From the Year:</b><br>2014 - 15 |
| <b>Subject Code &amp; Title</b> | 14UCT06 & DATA STRUCTURES                                                                                                                                                                                                                                                                                                                            | <b>Semester:</b><br>II                       |
| <b>Hrs/Week:</b>                | 4 Hrs                                                                                                                                                                                                                                                                                                                                                | <b>Credit:</b> 4                             |
| <b>Objectives</b>               | To teach about the concepts of Array, Stack, Queue, List, Linked List, Tree, and Searching.                                                                                                                                                                                                                                                          |                                              |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                       | <b>Hrs</b>                                   |
| <b>Unit I</b>                   | Introduction – Creation of Programs – Analysis of programs – Arrays – Ordered Lists– Sparse Matrix - Representation of Arrays – Stacks and Queues – Fundamentals – Evaluation of Expressions – Multiple stacks and queues.                                                                                                                           | 10                                           |
| <b>Unit II</b>                  | Linked List: Singly Linked List - Linked Stacks and Queues - Polynomial Addition - More on Linked Lists - Doubly Linked List and Dynamic - Storage Management - Garbage Collection and Compaction.                                                                                                                                                   | 11                                           |
| <b>Unit III</b>                 | Trees: Basic Terminology - Binary Trees - Binary Tree Representations - Binary Trees -Traversal - More on Binary Trees - Threaded Binary Trees - Binary Tree Representation of Trees - Counting Binary Trees. Graphs: Terminology and Representations - Traversals, Connected Components and Spanning Trees - Shortest Paths and Transitive Closure. | 10                                           |
| <b>Unit IV</b>                  | Internal Sorting: Insertion Sort - Quick Sort - 2 Way Merge Sort - Heap Sort - Sorting on Several Keys. Files: Files, Queries and Sequential Organizations - Index Techniques -File Organizations.                                                                                                                                                   | 11                                           |
| <b>Unit V</b>                   | External Sorting: Storage Devices -Sorting with Disks: K-Way Merging-Sorting with Tapes. Symbol Tables: Static Tree Tables - Dynamic Tree Tables. Hash Tables: Hashing Functions - Overflow Handling.                                                                                                                                                | 10                                           |

**Text Book:**

1. Ellis Horowitz and Sartaj Sahni, “Fundamentals of Data Structure”, Galgotia Book Source, 2<sup>nd</sup> Edition, 1999, ISBN-13: 9780716782636.

**Reference Books:**

1. Aaron M Tanenbaum, Yedidye Langsam, Moshe J Augenstein, “Data structure using C”, PHI Publication, Facsimile Edition, ISBN-13: 9780131997462.
2. Ashok N Kamthane, “Programming and Data Structures”, Pearson Education, 1<sup>st</sup> Indian Print 2004, ISBN: 81-297-0327-0.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                 |                                              |
| <b>Course</b>                   | B.Sc C.T                                                                                                                                                                                                                                            | <b>Effective From the Year:</b><br>2014 - 15 |
| <b>Subject Code &amp; Title</b> | 14UCT07 & DISCRETE MATHEMATICS                                                                                                                                                                                                                      | <b>Semester:</b><br>II                       |
| <b>Hrs/Week:</b>                | 4 Hrs                                                                                                                                                                                                                                               | <b>Credit:</b> 5                             |
| <b>Objectives</b>               | To instruct the concepts of Set Theory, Relations, Languages and Graph Theory.                                                                                                                                                                      |                                              |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                      | <b>Hrs</b>                                   |
| <b>Unit I</b>                   | Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams- Set operations & Laws of set theory-Fundamental products-partitions of sets - minsets- Algebra of sets and Duality-Inclusion and Exclusion principle. | 10                                           |
| <b>Unit II</b>                  | Mathematical logic – Introduction - Propositional calculus – Basic logical operations - Tautologies - Contradiction - Argument - Method of proof.                                                                                                   | 10                                           |
| <b>Unit III</b>                 | Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.         | 10                                           |
| <b>Unit IV</b>                  | Languages – Operations on languages – Regular Expressions and regular languages – Grammar – Types of grammars – Finite state machine – Finite – State automata.                                                                                     | 10                                           |
| <b>Unit V</b>                   | Graph Theory – Basic terminology – Paths, Cycle and Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory.                                                                                                      | 12                                           |

**Text Book:**

1. Sharma .J.K, “Discrete Mathematics”, MacMillan India Ltd, 3<sup>rd</sup> Edition 2005, ISBN-13: 9780230322301.

**Reference Books:**

1. Tremblay .J.P, Manohar .R, “Discrete Mathematics Structures with Applications to Computer Science”, Mc Graw Hill Publication.
2. Dr. Venkataramen .M.K, Dr Sridharan .N, Chandarasekaran .N “Discrete Mathematics” The National publishing Company Chennai. ISBN-13: 9788172863722.

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## **Department of Computer Technology**

### **PROGRAMMING LAB - II (“C++”)**

**Subject Code: 14UCT08**

**Semester II**

**Credit: 2  
Total Hrs: 52**

1. Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function POP ( ) to delete an element. Check for overflow and underflow conditions.
2. Create a class ARITH which consists of a FLOAT and an integer Variable. Write member ADD ( ), SUB ( ), MUL ( ), DIV ( ), MOD ( ) to perform addition, multiplication, division and modulus respectively. Write member functions to get and display values.
3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix. Overload the operators +,-,\* to add subtract and multiply two matrices. Write member functions to get and display MAT object values.
4. Create a class STRING. Write member function to initialize, get and display strings. Overload the operator + to concatenate two strings, == to compare two strings and a member function to find the length of the string.
5. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic-salary, and grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da, hra, pf depending on the grade and Display the Payslip in a neat format using console I/O.
6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal\_Area( ) and Cal\_PERI to calculate AREA and PERIMETER of various figures. Derive three Classes SQUARE, RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result.

7. Create two classes which consist of two private variables, one float and one integer variables in each class. Write member functions to get and display them. Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.
8. Write a user defined function USERFUN ( ) which has the formatting commands like setw( ) , showpoint , showpos precision ( ). Write a program which prints a multiplication table and uses USERFUN ( ) for formatting.
9. Write a program to perform Insertion, Deletion and Updation using files.
10. Write a program which takes a file as argument and copies into another file using Command Line Arguments.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT09 & JAVA PROGRAMMING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Semester:</b><br>III                    |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | Ability to write Programs in Java using the Oops Concepts like Encapsulation, Data Abstraction, Inheritance, Polymorphism and Exception handling and to develop Applets.                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Java Evolution</b> – History, Features, How Java differs from C and C++, Java support systems, Java environment – Overview of Java Language – Constants, Variables and Data Types - Operators and Expressions – Decision Making and Branching.                                                                                                                                                                                                                                                                                                                                    | 13                                         |
| <b>Unit II</b>                  | <b>Classes, Objects and Methods</b> – Arrays, Strings and Vectors – <b>Interfaces:</b> Multiple Inheritance – <b>Packages:</b> Putting Classes Together.                                                                                                                                                                                                                                                                                                                                                                                                                             | 13                                         |
| <b>Unit III</b>                 | <b>Multithreaded Programming:</b> Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the Runnable Interface. <b>Managing Errors and Exceptions:</b> Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statements – Throwing our Own Exceptions – Using Exceptions for Debugging.                                                                                       | 13                                         |
| <b>Unit IV</b>                  | <b>Applet Programming:</b> How Applets Differ From Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating an Executable Applet –Applet Tag – Adding Applet to HTML File – Running the Applet – More About Applet Tag – Passing Parameters to Applets – Aligning the Display– Displaying Numerical Values – Getting Input From the User. <b>Graphics Programming</b> –The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Chart. | 13                                         |

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| <b>Unit V</b> | <b>Managing Input / Output Files in Java:</b> Concept of Streams – Stream Classes – Byte Stream Classes – Character Stream Classes – Using Streams – Other Useful I/O Classes – Using the File Class – Input / output Exceptions – Creation of Files – Reading / Writing Characters – Reading / Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output – Other Stream Classes. | 13 |
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**Text Book:**

1. E. Balagurusamy, “Programming With JAVA A Primer”, Tata McGraw Hill Publications, 2<sup>nd</sup> Edition, 4<sup>th</sup> Reprint 2011, ISBN-13: 9780070141698.

**Reference Books:**

1. John R. Hubbard, “Programming with Java”, 2<sup>nd</sup> Edition, Schaum’s outline Series, Tata McGraw-Hill, 2007, ISBN-13: 9780070589421.
2. Timothy Budd, “Understanding Object Oriented Programming with Java”, Pearson Education, 2007, ISBN-13: 9780201308815.
3. Deitel & Deitel, “Java TM: How to Program”, 7<sup>th</sup> Edition, PHI, 2008, ISBN-13: 9780136123712.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT10 & RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Semester:</b><br>III                    |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | This subject is intended to introduce the fundamental concepts necessary for designing, using and implementing Database systems and applications.                                                                                                                                                                                                                                                                                                                                                       |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Database Concepts – A Relational approach:</b> Database – Relationships – DBMS – The Relational Data Model – Integrity Rules – Theoretical Relational Languages. <b>Database Design – Data Modeling and Normalization:</b> Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – Denormalization – Another Example of Normalization.                                                                                                                                   | 13                                         |
| <b>Unit II</b>                  | <b>Oracle9i – An Overview:</b> Personal Database – Client/Server Databases - Oracle9i: An Introduction – The SQL *Plus Environment – SQL – Logging into SQL *Plus – SQL *Plus Commands – Oracle Errors and Online Help – Alternate Text Editors - SQL *Plus Worksheet – iSQL *Plus. <b>Oracle Tables – Data Definition Language:</b> Naming Rules and Conventions – Data Types – Constraints – Create, Display, Alter, Drop, Rename and Truncating Oracle Table – Table Types – Spooling – Error codes. | 12                                         |
| <b>Unit III</b>                 | <b>Working with Tables - Data Management and Retrieval:</b> DML – Adding a New Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with a WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE Command – CASE structure. <b>Functions and Grouping:</b> Built-In functions – Grouping Data.                                                                                       | 13                                         |

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| <b>Unit IV</b> | <b>Multiple Tables: Joins and Set operators:</b> Join – Set Operators. <b>PL/SQL – A Programming Language:</b> History – Fundamentals of PL/SQL – PL/SQL Block Structure – Comments – Data Types – Other Data Types – Variable Declaration – Anchored Declaration – Assignment Operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. <b>Control Structures and Embedded SQL:</b> Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control Statements. | 13 |
| <b>Unit V</b>  | <b>PL/SQL Cursors and Exceptions:</b> Cursors – Implicit & Explicit Cursors – Implicit & Explicit Cursor Attributes – Cursor FOR loops – SELECT...FOR UPDATE Cursor – WHERE CURRENT OF Clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions. <b>PL/SQL Composite Data Types:</b> Composite Data Types – PL/SQL Records – PL/SQL Records – PL/SQL Tables – PL/SQL Varrays. <b>Named Blocks:</b> Procedures – Functions – Packages –Triggers –Data Dictionary Views.                        | 14 |

**Text Book:**

1. Nilesh Shah (2009), “Database Systems Using Oracle”, PHI Publication, Indian reprint, 2<sup>nd</sup> Edition, ISBN-13: 9788120332362.

**Reference Books:**

1. Arun Majumdar and Pritimoy Bhattacharya, (2007), “Database Management Systems”, TMH, ISBN-13: 9780074622391.
2. Gerald V. Post, (2006), “Database Management Systems”, 3<sup>rd</sup> Edition, TMH Publication, ISBN-13: 9780070635265.
3. Jonathan Gennick, (2005), “Oracle SQLPlus Pocket Reference”, E. H. J. Pallett Publication, ISBN-13: 9788173669330

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Effective From the Year:</b><br>2015- 16 |
| <b>Subject Code &amp; Title</b> | 14UCT11 & OPERATING SYSTEMS                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Semester:</b><br>III                     |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Credits:</b> 5                           |
| <b>Objectives</b>               | On Successful Completion of this subject the students should have known about: - OS Concepts, Process, Files, Dead Lock Etc.,                                                                                                                                                                                                                                                                                                                              |                                             |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Hrs</b>                                  |
| <b>Unit I</b>                   | <b>Overview:</b> Introduction – Mainframe systems –Desktop systems –Multiprocessor systems – Distributed systems – Clustered systems – Real Time Systems <b>Operating-System Structures:</b> System Components- Operating System Services –System Calls – System Programs – System Structure.                                                                                                                                                              | 12                                          |
| <b>Unit II</b>                  | <b>Process Management:</b> Process Concept – Process scheduling – Operations on Process – Cooperating Processes – Inter-process Communication <b>CPU Scheduling :</b> Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple-Processor Scheduling – Real Time Scheduling – <b>Process Synchronization:</b> The Critical-Section Problem – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Critical regions. | 13                                          |
| <b>Unit III</b>                 | <b>Deadlocks:</b> Deadlock Characterization – Methods for handling Deadlock – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlock – <b>Memory Management:</b> Storage Management – Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging.                                                                                                                                          | 13                                          |
| <b>Unit IV</b>                  | <b>Storage Management:</b> Virtual memory – Demand Paging –Page Replacement: FIFO Page Replacement – Optimal Page Replacement – LRU Page Replacement – File concept – Access methods – Directory Structure .                                                                                                                                                                                                                                               | 14                                          |
| <b>Unit V</b>                   | File System Structure – File System Implementation – Directory Implementation – Allocation methods - Disk Structure – Disk Scheduling – Disk management – <b>Case study:</b> Linux, Windows XP.                                                                                                                                                                                                                                                            | 13                                          |

**Text Book:**

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, “Operating System Concepts” 6th Edition, John Wiley and Sons, 2011.

**Reference Books:**

1. Achyut S Godbole, “Operating Systems” , TMH Publications, 2002
2. H. M Deitel, “Operating Systems”, 2nd Edition, Pearson Education Publication, 2003.
3. John J. Donovan, “Systems Programming”, TMH Publications, 1991
4. D.M. Dhamdhere, “Systems Programming and Operating Systems “, 2<sup>nd</sup> Revised Edition, 27<sup>th</sup> reprint 2008.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                      |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                            | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT12 & COMPUTER SYSTEM ARCHITECTURE                                                                                                                                                                                   | <b>Semester:</b><br>III                    |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                    | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To teach about elements of Computer Organization and Architectures and hardware operations of computers.                                                                                                                 |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                           | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Basic Computer Organizations and Design:</b> Instruction Codes – Computer Registers – Computer Instructions –Timing Control – Instruction Cycle – Memory-Reference Instructions –Input-Output and Interrupt.          | 12                                         |
| <b>Unit II</b>                  | <b>Central Processing Unit:</b> General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control – Reduced Instruction Set Computer(RISC). | 13                                         |
| <b>Unit III</b>                 | <b>Computer Arithmetic:</b> Addition and Subtraction – Multiplication Algorithms – Division Algorithms – Floating-Point Arithmetic Operations: Register Configuration – Addition and Subtraction.                        | 13                                         |
| <b>Unit IV</b>                  | <b>Input-Output Organization:</b> Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access(DMA) – Input-Output Processor(IOP).           | 13                                         |
| <b>Unit V</b>                   | <b>Memory Organization:</b> Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.                                                         | 14                                         |

**Text Book:**

1. M. Morris Mano, "Computer System Architecture", Pearson Education, 3<sup>rd</sup> Edition, ISBN 978-81-317-0070-9.

**Reference Books:**

1. John I Hennessy, "Computer Architecture", 4<sup>th</sup> Edition, ISBN 97831207260.
2. S.P.S Saini, "Computer system architecture and organization", S.k. Kataria & Sons Publication, 2010 ISBN-13: 9788189757731.
3. C. Hamacher, V. Zvonko, S. Zaky, "Computer Organization", McGraw Hill, 2011, 5<sup>th</sup> edition, ISBN-13: 9781259005275.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB III (JAVA)**

**Semester III**

**Subject Code: 14UCT13**

**Credits: 2**

**Total Hrs: 52**

1. Write a java program to perform Arithmetic operations using Switch Case.
2. Write a java program to calculate the factorial of a given number.
3. Write a java program to check whether the given string is a palindrome or not.
4. Write a java program to get student information and display it using array.
5. Write a java program for subclass using polymorphism, inheritance, method overriding and constructor.
6. Write a java program to merge and sort the given number of two arrays.
7. Write a java program to perform the addition of two matrices.
8. Write a java program to perform the comparison of two strings.
9. Write a java program to calculate tax from the given current tax rate using the concept of Interface.
10. Write a java program to perform the usage of vector class.
11. Write a java program to illustrate the concept of Package creation.
12. Write a java program to illustrate the concept of multithreading using sleep() and stop() functions.
13. Write a java program to illustrate the concept of synchronization.
14. Write a java program to illustrate the concept of Exception Handling Mechanism.
15. Write a java program to develop an applet window for mouse Event.
16. Write a java program to calculate the sum of two numbers.
17. Write a java program to find the largest of three numbers.
18. Write a java program to develop an applet for calculator.
19. Write a java program to draw a face in Applet Programming.
20. Write a java applet program to illustrate the movement of a car.
21. Write a java program to illustrate the concept of swing.

22. Write a java program to create a new file and rename it.

23. Write a java program to illustrate the concept of copying bytes from one file to another.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB IV – RDBMS and ORACLE**  
**Semester III**

**Subject Code: 14UCT14**

**Credit: 2**

**Total Hrs: 52**

1. Write a query for DDL commands.
2. Write a query for DML commands.
3. Write a query for TCL commands.
4. Write a query for NOT NULL, CHECK, UNIQUE constraints.
5. Write a PL/SQL program to check the given number is odd or even.
6. Write a query for DATE, ARITHMETIC, NUMBER functions in SQL operations.
7. Write a query for JOIN operations.
8. Write a PL/SQL program to find the given number is prime or not.
9. Write a query for set operators.
10. Write a PL/SQL program to display the Fibonacci series for a given number.
11. Write a query for following i) ROWID ii) SYNONYM iii) SEQUENCE.
12. Write a PL/SQL program for user-defined exception to evaluate the commission.
13. Write a PL/SQL program using functions to display the factorial of the given number.
14. Write a PL/SQL program to calculate the average of 1 to 100 numbers.
15. Write a PL/SQL program to reverse a given number.
16. Write a query for grouping a data in SQL.
17. Write a PL/SQL program to check the given string is palindrome or not.
18. Write a PL/SQL block to delete and update using trigger.
19. Write a query for the HAVING clause.
20. Write a query for CONVERSION and GROUP function.
21. Write a PL/SQL program for cursor with parameter.

22. Write a query for GROUP BY clause.

23. Write a Program for personal details using Visual Basic as frontend and Oracle as backend.

24. Write a Program for student mark list using Visual Basic as frontend and Oracle as backend.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                   |                                            |
| <b>Course</b>                   | B.Sc. C.T                                                                                                                                                                                                             | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCTNA01 & Skill Based Non-Major Elective I- (INTRODUCTION TO HTML)                                                                                                                                                  | <b>Semester:</b> III                       |
| <b>Hrs/Week:</b>                | 1                                                                                                                                                                                                                     | <b>Credit:</b> 2                           |
| <b>Objectives</b>               | To impart knowledge about the HTML tags, Tables, Frames and Forms in HTML.                                                                                                                                            |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                        | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | Introduction to HTML: What is HTML - Command tags - Quotation Marks – Spacing - New webpage creation - Font type - size - Bold and Italic - Setting color - Text color- Superscript and Subscript.                    | 2                                          |
| <b>Unit II</b>                  | Working with Graphics and HTML: Graphics and HTML – Image Alignment – Creating Banner – Adding Horizontal rules – Page layout – Line Breaks – Space between paragraphs – Creating columns.                            | 3                                          |
| <b>Unit III</b>                 | Tables in HTML: Creating table – Dividing table into columns – Creating Header – Adding Border – Heading Across two or more columns – Display tables – Changing table's width and height.                             | 3                                          |
| <b>Unit IV</b>                  | Forms in HTML: Creating forms – Menus – Radio buttons – Check boxes – Text boxes – Text areas – Password boxes – Submit button.                                                                                       | 2                                          |
| <b>Unit V</b>                   | Working with Frames: Frames – Creating frameset – Creating columns - Creating rows and columns – Adjusting frame margins – Combining framesets – Adjusting border – Space between frames – Hiding or showing borders. | 3                                          |

**Text Book** : “HTML 4”, LP Editorial Board, 1<sup>st</sup> Edition 2004, Reprint 2010.

**Reference Book** : Mary Gillen, “HTML, Intermediate Skills & Drills”, Icon Logic Publication.

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| <b>Department</b>               | Computer Technology                                                                                      |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                            | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCTNB01& Skill Based Non-Major Elective I – (MULTIMEDIA FUNDAMENTALS)                                  | <b>Semester:</b><br>III                    |
| <b>Hrs/Week:</b>                | 1                                                                                                        | <b>Credit:</b> 2                           |
| <b>Objectives</b>               | To inculcate knowledge on Multimedia concepts like Text, Graphics, Video Capturing etc.,                 |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                           | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | What is Multimedia? – Multimedia Application goals and Objectives.                                       | 2                                          |
| <b>Unit II</b>                  | Multimedia Development Team – Possibilities of Multimedia Technology – Multimedia and the Internet.      | 3                                          |
| <b>Unit III</b>                 | Importance of Text in Multimedia Development – Text Format – Font Type – Point Size – Character Formats. | 3                                          |
| <b>Unit IV</b>                  | Importance of Graphics in Multimedia Development – Kinds of Graphics – Sources of Graphics.              | 3                                          |
| <b>Unit V</b>                   | Importance of Video Capturing, Sound Capturing & Editing – Using Digital video.                          | 2                                          |

**Text Book:**

1. John Villain, Casanova, Louis Moline, “Multimedia- An Introduction”, Prentice hall / Macmillan Computer Publishing Reprint, 3<sup>rd</sup> printing Sep - 2002.

**Reference Book:**

1. John F Koegel Buford, “Multimedia Systems”, Pearson Education, Copyright 1994 by ACM Press.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                        |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                              | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT15 & WEB TECHNOLOGY (PHP and MySQL)                                                                                                                                                                                                                                                                                                                                                   | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                      | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To teach the concepts of Variables and Data Types, Arrays and various MySQL Queries and Connectivity.                                                                                                                                                                                                                                                                                      |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                             | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Introducing PHP:</b> History – Unique features – Basic Development Concepts – Creating your First PHP Script – Sample Applications. <b>Using Variables and Operators:</b> Storing Data in Variables – Understanding PHP's Data types – Setting and Checking Variable Data Types – Using Constants – Manipulating Variables with Operators – Handling Form Input.                        | 13                                         |
| <b>Unit II</b>                  | <b>Controlling Program Flow:</b> Writing Simple Conditional Statements – Writing More Complex Conditional Statements – Repeating Actions with Loops – Working with String and Numeric Functions. <b>Working with Arrays:</b> Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms – Working with Array Functions – Working with Dates and Times. | 13                                         |
| <b>Unit III</b>                 | <b>Using Functions and Classes:</b> Creating User-Defined Functions – Creating Classes – Using Advanced OOP Concepts. <b>Working with Files and Directories:</b> Reading Files – Writing Files – Processing Directories – Performing Other File and Directory Operations.                                                                                                                  | 12                                         |
| <b>Unit IV</b>                  | <b>Working with Databases and SQL:</b> Introducing Databases and SQL – Creating and Populating a Database – Using PHP's MySQLi Extension – Adding or Modifying Data – Handling Errors. Using PHP's SQLite Extension – Using PHP's PDO Extension – Using a MySQL Database – Switching to a different Database.                                                                              | 13                                         |

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| <b>Unit V</b> | <b>Working with Cookies, Sessions and Headers:</b> Working with Cookies – Saving and Restoring User Preferences – Working with Sessions – Using HTTP Headers. <b>Handling Errors:</b> Handling Script Errors – Using Exceptions – Validating form Input – Logging Errors – Debugging Errors. | 14 |
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**Text Book:**

1. Vikram Vaswani(2009), “PHP: A Beginner’s Guide”, Tata McGraw Hill Publications, Second Reprint, ISBN-13: 9780070140691.

**Reference Books:**

1. Tim Converse, “PHP 4 Bible”, IDG Books Worldwide, INC, An International Data Group Company, ISBN-13: 9788126501472.
2. Rasmus Lerdorf, Kevin Tatroe “Programming PHP”, O'Reilly Media, 2<sup>nd</sup> Edition, 2011, ISBN-13: 9788184042719.
3. Luke Welling; Laura Thomson, “PHP and MySQL-Web Development”, 4<sup>th</sup> Edition, 2010, ISBN-13: 9788131729878.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                            |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT16 & INTRODUCTION TO WEB DESIGNING(HTML, DHTML, XML and JAVASCRIPT)                                                                                                                                                                                                                                                                                                                                                       | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To convey the knowledge about the Internet, Web Browsers, Web Page Creation using Scripting Languages.                                                                                                                                                                                                                                                                                                                         |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>HTML and Graphics:</b> Document Structure Tags – Formatting Tags – List Tags – Hyper Link Tags – Image and Image maps <b>Image Maps:</b> Client-Side Image Maps – Server-side Image Maps – Using Server-side and Client-Side Image maps together. <b>Tables:</b> Introduction – The Table Tags – Alignment – Controlling Other Table Attributes – Spanning Multiple Rows and Columns – Table Section and Column Properties. | 14                                         |
| <b>Unit II</b>                  | <b>Frames:</b> Introduction – Setting up a Frames Document – Placing Content in Frames with the <FRAME> Tag – Creating Floating Frames – Using Hidden Frames. <b>Forms:</b> Creating Forms – Labeling Input Fields –Form Field Event Handlers – Passing Form Data. <b>Style Sheets:</b> Linking to Style Information in a Separate File – Embedded Style Information – Inline Style Information – Tips for Style Users.        | 14                                         |
| <b>Unit III</b>                 | <b>Introduction to Java Scripting</b> – Introduction – The Java Script Language – Programming with Java Script –Java Script and Web Browsers. The Web Browser Object Model: The Window – Location– History – Document – Link, Area and Anchor – Form – Image – Java Script Objects.                                                                                                                                            | 13                                         |
| <b>Unit IV</b>                  | <b>Introduction to DHTML:</b> Web Page Layout and Content Positioning – Dynamic Styles with Cascading Style Sheets – Dynamic Fonts. <b>Advanced Microsoft Dynamic HTML:</b> Microsoft’s Implementation of DHTML – Internet Explorer Document Object Model – Dynamic HTML Events and the Event                                                                                                                                  | 13                                         |

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|               | Object – Using Dynamic HTML and the Data Source Object – Position HTML Elements with Dynamic HTML – DHTML Filters – Microsoft Script lets.                                                                                                                                                                                                                                                                                                                                                                                                               |    |
| <b>Unit V</b> | <b>XML Overview</b> – Linking with XML - Using Style sheets with XML - <b>Anatomy of an XML Document:</b> XML Markup – A Sample XML Documents – Logical Structure – Physical Structure – Markup Declarations – Element Markup – Attribute Markup – Naming Rules – Comments. <b>Creating XML Documents:</b> Markup Declarations – Element Declarations – Element Content Models – Attribute Declarations. <b>Creating XML Document Type Definitions:</b> DTDs Validation-Document Type Declarations-Standalone XML Documents-Developing the DTD from XML. | 11 |

### Text Book:

1. Erric Ladd, Jim O'Donnell, "Using Html 4, Xml, Java 1.2", Platinum Edition, 1<sup>st</sup> Edition, 1999, ISBN-13: 9788120315396.

### Reference Books:

1. Atul Kahate, "Web Technologies", Tata McGraw Hill, Sixth Reprint, 2007, ISBN-13: 9789332900912.
2. Steven Holzner, "XML Complete", Tata McGraw Hill, 1<sup>st</sup> Edition, ISBN-13: 9780070223622.
3. Mary Gillen, "HTML, Intermediate Skills & Drills", Icon Logic Publication.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                     |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                           | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT17 & DATA COMMUNICATION AND NETWORKS                                                                                                                                                                                                                                                                                               | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                   | <b>Credit:</b> 4                           |
| <b>Objectives</b>               | To study about network topologies, TCP/IP, ARP, RARP, UDP packets and FTP.                                                                                                                                                                                                                                                              |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                          | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | Introduction to Data Communications and Networking – Information Encoding – Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing – Transmission Errors: Detection and Correction.                                                                                                                      | 13                                         |
| <b>Unit II</b>                  | <b>Transmission Media:</b> Guided Media, Unguided Media. <b>Network Topologies:</b> Mesh, Star, Tree, Ring, Bus. Switching Basics- Circuit switching - Packet switching - Message switching - Router and Routing – Factors affecting Routing Algorithms – Approaches to Routing – Network Protocols and OSI Model.                      | 13                                         |
| <b>Unit III</b>                 | Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN) – X.25 Protocol – Frame Relay – Asynchronous Transfer Mode (ATM).                                                                                                                                 | 13                                         |
| <b>Unit IV</b>                  | Internetworking Concepts, Devices, Internet Basics, History and Architecture – Ways of Accessing the Internet – An Introduction to TCP / IP, IP, ARP, RARP, ICMP.                                                                                                                                                                       | 13                                         |
| <b>Unit V</b>                   | <b>TCP:</b> Features of TCP, Relationship between TCP and IP, Ports and Sockets, TCP Connections, what makes TCP Reliable, TCP Packet Format – User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP) – Web Browser Architecture. | 13                                         |

**Text Book:**

1. Achyut S.Godbole, “Data Communications and Networks”, Tata McGraw-Hill Publishing Company Limited, Eighteenth Reprint, 2010. ISBN-13: 978-0-07-047297.

**Reference Books:**

1. Behrouz A. Forouzan, “Data Communications and Networking” – Second Edition Update  
TataMcGraw-Hill Publishing Company Limited, Nineteenth reprint, 2007, ISBN-13:  
9780070499355.
2. Andrew S. Tanenbaum, “Computer Networks”, 4<sup>th</sup> Edition, Prentice Hall, ISBN-  
13:978817781652.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT18 & MICROPROCESSOR AND ALP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To know about Intel 8086, Intel 386 and 486 microprocessors, Memory and I/O addressing and MOTOROLA microprocessors.                                                                                                                                                                                                                                                                                                                                                                                                              |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Introduction to Microprocessors:</b> Evolution of Microprocessors – Single-chip Microcomputer – Embedded Microprocessors – Bit-Slice Processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors. <b>16-Bit Intel Microprocessors:</b> Intel 8086 – Pin Description of Intel 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 Based Computer System – Addressing Modes of 8086. | 13                                         |
| <b>Unit II</b>                  | <b>8086 Instruction Set</b> – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions. <b>Assembly Language Programs for 8086:</b> Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending Order – Block Move or Relocation (Byte Move) – Block Move (Byte Move) using REP Instruction – Sum of a Series:16-Bit, 32-Bit – Multi byte Addition.                                                                                                | 13                                         |
| <b>Unit III</b>                 | <b>Intel 386 and 486 Microprocessors:</b> Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Management Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration – Input devices – Output devices.                                                                                                                                                                | 13                                         |

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| <b>Unit IV</b> | <b>Memory and I/O Addressing – 8086 Addressing and Address Decoding:</b> Address decoders – ROM addressing decoding - RAM address decoding. <b>Programmable I/O Ports:</b> PPI Intel 8255 and Intel 82C55 – Operating modes of 8255 – BSR – Control groups – Control word – DMA Data Transfer. <b>Other Microprocessors :</b> Pentium Microprocessors – Pentium Pro Microprocessor – Alpha Microprocessor – Cyrix Microprocessors – MIPS Microprocessors – AMD Microprocessors. | 13 |
| <b>Unit V</b>  | <b>MOTOROLA Microprocessors :</b> MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040. <b>Interfacing of A/D Converter and Applications:</b> Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities.                                                                                                               | 13 |

**Text Book:**

1. Badri Ram, “Advanced Microprocessors and Interfacing”, Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint, 2009, ISBN-13:9780070434486.

**Reference Books:**

1. A.K. Ray, K.M. Bhurchandi, “Advanced Microprocessors and Peripherals”, Tata McGraw-Hill Publishing Company Limited, Second Edition, 2007, ISBN:13-9780070140622.
2. Douglas Hall, “Microprocessors & Interfacing”, McGraw Hill, Revised 2<sup>nd</sup> Edition, 2006, ISBN-13:9781259006159.
3. John Uffenbeck, “The 8086/88 Family: Design, Programming & Interfacing”, PHI. 1<sup>st</sup> Edition, ISBN-13: 9788120309333.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB V (WEB TECHNOLOGY)**

**Semester IV**

**Subject Code: 14UCT19**

**Credit: 2**

**Total Hrs: 52**

1. Find the biggest of 2 numbers.
2. Find the biggest of 3 numbers.
3. Check whether a number is positive or negative.
4. Find the biggest of two numbers using ternary operator.
5. Check whether the given number is odd or even.
6. Find the factorial of a number (while loop)
7. Reverse the digit (Use do while)
8. Find the sum of the digits (Use for loop)
9. Display the Fibonacci series for a particular limit.(Use for loop)
10. Check the given letter is vowel or not.
11. Create an Associative Array with Book Details and Display it in a table.
12. Write a program to create an array and try with all array programs.
13. Find the length of a string.
14. Create a form with one text field and submit buttons for string length, string reverse, uppercase.
15. Write a program of function passing two values and add the two values in the function.
16. Write a program of function showing with return value.
17. Create a registration form which contains fields name, Roll No, Gender and a submit button. All the details should be displayed in the server page when the user clicks the submit button.
18. Write a program to check whether the given number is prime or not.
19. Create Cookie; store a value "Ram" in the cookie.
20. Write a program of Cookie showing expire of cookie

21. Write a program to display the contents of a file(use fread)
22. Write a program to display the contents of a file(use fgets)
23. Write a program to display the contents of a file. (use fgetc)
24. Write a program to create a file and write contents to it
25. Write a program to append data to an existing file.
26. Write a program to upload a file and display the contents in server.
27. Write a program for cinema ticketing. All the age should be over 12 years, if less than, dont allow to get ticket.( apply the exception handling)

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB – VI (WEB DESIGNING)**

**Semester – IV**

**Subject code: 14UCT20**

**Credit: 2**  
**Total Hrs: 52**

1. Prepare a webpage for our college using basic HTML tags.
2. Prepare a College Alumni Cell webpage.
3. Prepare a Departmental store details using OL & UL.
4. Prepare Frames which includes 4 html programs.
5. Prepare an Industrial Visit agenda for Two days.
6. Prepare a webpage for seven wonders.
7. Prepare an Advertisement for any one high sale product.
8. Prepare a Bio-data form using DHTML.
9. Prepare an E-Mail creation form using DHTML.
10. Prepare your Proctorial form details using DHTML.
11. Create a home page using xml.
12. Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Declaration
13. Usage of Internal DTD, External DTD, Entity Declaration.
14. Design a catalog using XML.
15. Create a java script code block using arrays to generate the current data in words.
16. Create a web page which accepts user information and user commands on the web site to Check if all the text fields have been entered with data else display an alert.
17. Create a web page using two image files, which switch between one another as the mouse Pointer moves over the images.

18. Using Java Script's Window and document objects and their properties and various
19. Methods like alert (), eval (), ParseInt () etc. methods to give the dynamic functionality to HTML web pages
20. Writing Java Script snippet which make use of Java Script's inbuilt as well as user.

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| <b>Department</b>             | Computer Technology                                                                                                                       |                                            |
| <b>Course</b>                 | B. Sc. (C. T)                                                                                                                             | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code and Title</b> | 14UCTNA02 and Skill Based Non-Major Elective II – (INTERNET and WEB TECHNOLOGIES)                                                         | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>              | 1                                                                                                                                         | <b>Credit:</b> 2                           |
| <b>Objectives</b>             | To impart knowledge about the Internet, Web Browsers, Web Page Creation using scripting Languages                                         |                                            |
| <b>Unit</b>                   | <b>Content</b>                                                                                                                            | <b>Hrs</b>                                 |
| <b>Unit I</b>                 | Computer Networks: Basics – Topologies of Networks – Layers in Networking – Switching in Networks – Types of Networks – LAN, WAN and MAN. | 3                                          |
| <b>Unit II</b>                | The Internet: Basics – Addresses and Names for the Internet, Web Objects and Sites – E-Mail – WWW.                                        | 2                                          |
| <b>Unit III</b>               | Web Servers, Browsers and Security: The Web Server – The Proxy Server – Web Browsers – Microsoft Internet Explorer – Firewall.            | 3                                          |
| <b>Unit IV</b>                | Creating a Website and the Markup Language (HTML, DHTML): Hypertext and HTML – Dynamic HTML.                                              | 3                                          |
| <b>Unit V</b>                 | Searching and Web Casting Techniques: Introduction – Search Engines – Searching Tools.                                                    | 2                                          |

**Text Book:**

1. Raj Kamal, “Internet and Web Technologies”, 6<sup>th</sup> Reprint 2006, TMH Publications.

**Reference Books:**

1. Atul Kahate, “Web Technologies”, Tata McGraw Hill, 6<sup>th</sup> Reprint, 2007.
2. Mary Gillen, “HTML, Intermediate Skills and Drills”, Icon Logic Publication.

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| <b>Department</b>               | Computer Technology                                                                                                                                                           |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                 | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCTNB02 & Skill Based Non-Major Elective - II (CORELDRAW IN SIMPLE STEPS)                                                                                                   | <b>Semester:</b><br>IV                     |
| <b>Hrs/Week:</b>                | 1                                                                                                                                                                             | <b>Credit: 2</b>                           |
| <b>Objectives</b>               | To inculcate knowledge on Graphics, Shapes, Objects in CorelDraw.                                                                                                             |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | CorelDraw Graphics – Applications – Application window –Drawing Basic Geometric figure.                                                                                       | 3                                          |
| <b>Unit II</b>                  | Working with Lines: Drawing graphics – Pressure – Sensitive and Preset lines – About outline Tool.                                                                            | 2                                          |
| <b>Unit III</b>                 | Working with Objects – Selecting objects – Copying –Duplicating and deleting objects – Selecting color for an object - Positioning objects - Aligning - Distributing objects. | 3                                          |
| <b>Unit IV</b>                  | Working with Shapes - Working with grids and Guidelines – Modifying the shape of an object.                                                                                   | 3                                          |
| <b>Unit V</b>                   | Filling Object: Using uniform fills – Fountain fills – Pattern fills – Using Texture fills – Mesh fills – Using fills to Areas.                                               | 2                                          |

**Text Book:**

1. “CorelDraw X4 in Simple Steps” Kogent Solution Inc.

**Reference Book:**

1. Vishnupriya Singh, “CorelDraw X3”, Computech Publications ltd, 2009 Edition.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                             |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT21 & J2EE TECHNOLOGIES                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Semester:</b><br>V                      |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To develop knowledge about JApplet, Java Servlets, Servlet chains and Server pages.                                                                                                                                                                                                                                                                                                                                             |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | Tour of Swing: JApplet- Icons and Labels – Text Fields – Buttons – Combo Boxes - Tabbed Panes – Scroll Panes – Trees – Tables – Exploring Swing.                                                                                                                                                                                                                                                                                | 13                                         |
| <b>Unit II</b>                  | Servlet Overview and Architecture, Movement to Server-Side Java –Java Servlet - Practical applications for Java Servlets – Java Servlet Alternatives – Reasons to Use Java Servlets – Java Servlet Architecture.<br>Servlet Basics – The Life Cycle of a Servlet – A Basic Servlet – Basic Servlet Source – Building and Installing the Basic Servlet – The HTML Required to Invoke the Servlet – Dissecting the Basic Servlet. | 13                                         |
| <b>Unit III</b>                 | Server-Side includes - Servlet chaining: Servlet Chain – Uses for Servlet chain - Invoking a Servlet Chain– A practical Example using Servlet Chaining. Servlets and JDBC: JDBC – Two and Three-tier Database Access Models – JDBC Driver Types – JDBC Basics – A Basic JDBC Servlet.                                                                                                                                           | 13                                         |
| <b>Unit IV</b>                  | JSP – Java Server Pages — Conditions – Directives – Declarations- Implicit Variables – Scriptlets – Expressions. Servlet Sessions: Session Tracking – Working with Cookies.                                                                                                                                                                                                                                                     | 13                                         |
| <b>Unit V</b>                   | Java Beans – Java Beans – Advantages of Java Beans – Application Builder tools – The BDk – JAR Files – Introspection - Developing a simple bean – Using Bound Properties – Using the Bean Info Interface – Constrained properties – Persistence – Customizer – The Java Beans API.                                                                                                                                              | 13                                         |

**Text Books:**

1. Herbert Schildt, "JAVA 2: The Complete Reference", Tata-McGraw Hill, 5<sup>th</sup> Edition 2002, ISBN-13: 9780070495432.
2. James Goodwill, "Developing Java Servlets", Techmedia, 1<sup>st</sup> Edition 1999. ISBN 81-7635-325-6.

**Reference Books:**

1. Subrahmanyam Allaramaju, Cedric Buest , Marc Wilcox, Sameer Tyagi , "Professional Java Server Programming J2EE", WROX Press Ltd, 1.3 Edition, 2001, ISBN-13: 978-1861005373.
2. Jayson Falkner and Kevin Jones, "The J2EE Technology Web Tier", Addison-Wesley Professional, 2003, ISBN-13: 978-0321136497.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                       |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Effective From the Year:</b><br>2015-16 |
| <b>Subject Code &amp; Title</b> | 14UCT22 & COMPUTER GRAPHICS                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Semester:</b><br>V                      |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To develop knowledge about 2D Geometric Transformations and Algorithms, Unicode standard, 3D Modeling and Transformation.                                                                                                                                                                                                                                                                                                                 |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Overview of Graphics Systems:</b> Video display devices – Refresh Cathode-Ray Tubes - Raster Scan Displays - Random Scan Display - Color CRT monitors – Direct – View Storage Tubes – Flat Panel Displays – Three – Dimensional Viewing Devices – Raster Scan System - Random Scan System – Input Devices.                                                                                                                             | 15                                         |
| <b>Unit II</b>                  | <b>Output Primitives:</b> Points and Lines – Line-Drawing Algorithms – Loading frame Buffer – Line function – Circle-Generating Algorithms. <b>Attributes of Output Primitives:</b> Line Attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.                                                                                                                                                           | 16                                         |
| <b>Unit III</b>                 | <b>2D Geometric Transformations:</b> Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. <b>2D Viewing:</b> The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations- Point, <b>Line:</b> Cohen – Sutherland Line Clipping, Liang – Barsky Line Clipping, Polygon, Curve and Text Clipping | 16                                         |
| <b>Unit IV</b>                  | <b>3D Concepts:</b> 3D Display Methods - 3D Graphics Packages. <b>3D Object Representation:</b> Polygon Surfaces – Curved Lines and Surfaces – Blobby Objects. <b>3D Geometric and Modeling Transformations:</b> Translation – Rotation – Scaling – Other Transformations.                                                                                                                                                                | 15                                         |
| <b>Unit V</b>                   | <b>Visible – Surface Detection Methods:</b> Classification of Visible – Surface Detection Algorithms – Depth –Buffer Method – Scan –Line Method - Depth – Sorting Method- BSP- Tree Method – Area – Subdivision Method – Octree Method – Ray-Casting Method. <b>Color Models and Color Applications:</b> Standard Primaries and the Chromaticity Diagram – Intuitive Color Concepts – RGB Color                                           | 16                                         |

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|  | Model – YIQ Color Model – CMY Color Model – HLS color Model – Color Selection and Applications. |  |
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**Text Book:**

1. Donald Hearn, M.Pauline Baker, “Computer Graphics”, PHI 2<sup>nd</sup> edition, ISBN: 81-23-0944-8.

**Reference Books:**

1. Agarwal, Udit, “Computer Graphics”, S.K. Kataria & Sons, 2<sup>nd</sup> Edition, 2010, ISBN-13: 9789380027708.
2. Xiang, Plastock, Avadhani, “Computer Graphics”, McGraw Hill, 2<sup>nd</sup> Edition, 2006, ISBN-13: 9780070601659.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                          |                                            |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                                                                                                  | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT23 & CLOUD COMPUTING                                                                                                                                                                                                                                                                                                                                    | <b>Semester:</b><br>V                      |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                        | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To make out facts about cloud computing, developing cloud services, Cloud Storage, Cloud Computing at Work, Cloud computing Security Issues and Challenges etc.                                                                                                                                                                                              |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                               | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | Cloud computing Basics: Cloud Computing Overview – Applications – Internet and the Cloud – First Movers in the Cloud. <b>Your Organization and cloud computing:</b> Benefits – Limitations - Security Concerns.                                                                                                                                              | 12                                         |
| <b>Unit II</b>                  | <b>Cloud Computing Technology:</b> Hardware and Infrastructure – Clients – Security – Network – Services. <b>Accessing the cloud:</b> Platforms – Web Applications – Web APIs – Web Browsers. <b>Cloud Storage:</b> Overview – Cloud storage providers – Standards.                                                                                          | 13                                         |
| <b>Unit III</b>                 | <b>Cloud Computing Services:</b> Infrastructure as a service – Platform as a service – Software as a service – Software plus services. Business Applications – Operational Benefits – Economic Benefits – Tips for Evaluating SaaS – Staffing Benefits. Deleting your Datacenter. <b>Cloud Computing with the Titans:</b> Google – Microsoft – Amazon – IBM. | 14                                         |
| <b>Unit IV</b>                  | <b>Cloud Computing at Work:</b> Overview – Driving forces – Company Offerings – Industries. <b>Software plus services:</b> Overview – Mobile device Integration – Providers – Microsoft online. <b>Local clouds and thin clients:</b> Virtualization in your organization - Server solutions – Thin Clients.                                                 | 13                                         |
| <b>Unit V</b>                   | <b>Migrating to the cloud:</b> Cloud services for Individuals – Enterprise – class cloud Offerings – Migration. <b>Future of Cloud Computing:</b> Analyze your services – Best Practices –Evolution of Cloud Computing in Future. Cloud Computing Security Issues and Challenges.                                                                            | 13                                         |

**Text Book:**

1. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, “Cloud Computing: A Practical Approach”, Tata McGraw-Hill Edition 2010, Seventh Reprint 2011, ISBN-13: 978-0-07-068351-8.

**Reference Books:**

1. Michael Miller, “Cloud Computing: Web-Based Applications That Change the way you work and Collaborate Online”, Macmillan Computer Publication, August 2008, ISBN-13: 9780789738035.
2. [www.researchgate.net/cloud computing](http://www.researchgate.net/cloud%20computing)

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT24 & SOFTWARE ENGINEERING                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Semester:</b><br>V                      |
| <b>Hrs/Week:</b>                | 5 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To communicate information about software development approaches, process models, requirement engineering, building analysis model, design methodologies and software testing.                                                                                                                                                                                                                                                       |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <p><b>Introduction to Software Engineering:</b> The evolving role of software - Changing Nature of Software - Software myths.</p> <p><b>A Generic view of process:</b> Software engineering - A layered technology - a process framework - The Capability Maturity Model Integration (CMMI).</p> <p><b>Process models:</b> The waterfall model - Incremental process models - Evolutionary process models - The Unified process.</p> | 13                                         |
| <b>Unit II</b>                  | <p><b>System Engineering:</b> Computer-Based Systems – the system engineering Hierarchy – System Modeling.</p> <p><b>Requirements Engineering:</b> A bridge to design and construction- Requirements Engineering Tasks – Initiating the Requirements Engineering Process - Eliciting Requirements – Building the Analysis Model.</p>                                                                                                 | 13                                         |
| <b>Unit III</b>                 | <p><b>Building the Analysis Model:</b> Requirement analysis – analysis Modeling approaches – Data modeling concepts – Object-Oriented Analysis- Scenario-Based Modeling – Flow-Oriented Modeling – Class-Based Modeling – Creating a Behavioral Model.</p>                                                                                                                                                                           | 13                                         |
| <b>Unit IV</b>                  | <p><b>Design Engineering:</b> Design process and Design quality - Design concepts - the design model.</p> <p><b>Creating an architectural design:</b> Software architecture - Data design - Architectural styles and patterns - Architectural Design – Mapping Data Flow into a Software Architecture.</p>                                                                                                                           | 13                                         |

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| <b>Unit V</b> | <b>Testing Strategies:</b> A strategic approach to software testing, Test strategies for conventional software, Validation testing, System testing, The art of Debugging<br><b>Testing Tactics:</b> Black-Box and White-Box Testing - White- Box Testing - Basis path Testing – Control Structure Testing - Black-Box Testing. | 13 |
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**Text Book:**

1. Roger S. Pressman, “Software Engineering, A Practitioner’s Approach”, McGraw-Hill International Edition 2005, 6<sup>th</sup> edition, ISBN: 007-124083-7.

**Reference Books:**

1. Ian Sommerville, “Software Engineering”, Addison Wesley 2004, 7<sup>th</sup> edition, ISBN-13: 978-0321210265.
2. Stephen Schach, “Software Engineering”, Tata McGraw Hill Publishing Company, New Delhi, 7<sup>th</sup> Edition, 2007, ISBN-13: 9780070647770.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB - VII (J2EE TECHNOLOGIES)**

**Semester V**

**Subject Code: 14UCT25**

**Credit: 2**

**Total Hrs: 52**

1. Create JTextField and JButton Component for displaying pizza order.
2. Create a program to illustrate the concept of JCheckBox class.
3. Create a program to illustrate the concept of JRadioButton class.
4. Create a JComboBox component for displaying images.
5. Create a JTabbedPane component for displaying login form details.
6. Create a JScrollPane component for displaying provisional items.
7. Create a JTree component for displaying the list of files and folders in C drive.
8. Create a JTable component for displaying student details.
9. Create a Game login form using various components.
10. Create a JugglerBean.
11. Create a MoleculeBean.
12. Create a program to illustrate the concept of Introspection.
13. Create a bean program to design a simple property of the bean.
14. Create a java program to illustrate the concept of Generic Servlet.
15. Create a java program to illustrate the concept of Http Servlet.
16. Create a java program to illustrate the concept of Servlet chaining.
17. Create a java program to illustrate the concept of Server-side Includes.
18. Create a java program to illustrate the concept of Request Object Method.
19. Create a java program to illustrate the concept of JDBC Connectivity.
20. Create a jsp program to illustrate the concept of Implicit Objects.
21. Create a program to find the factorial of a given number using JSP Conditions.

22. Create a program to illustrate the concept of JSP Directives.
23. Create a program to illustrate the concept of JSP Expressions.
24. Create a program to illustrate the concept of Sessions in JSP.
25. Create a program to illustrate the concept of Cookies in JSP.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB - VIII (COMPUTER GRAPHICS)**  
**Semester V**

**Subject Code: 14UCT26**

**Credit: 2**

**Total Hrs: 52**

**Graphics:**

1. Write a C program to generate a line using DDA Algorithm.
2. Write a C program to generate a line using Bresenham's Line Drawing Algorithm.
3. Write a C program to generate a circle.
4. Write a C program to generate a circle using Mid-point Circle Algorithm.
5. Write a C program to generate an ellipse using Mid-point Ellipse Algorithm.
6. Write a C program to generate different types of lines.
7. Write a program to generate a chessboard using graphics.
8. Illustrate the concept of translation, scaling, rotation.
9. Write a C program for window-to-viewport conversion.
10. Write a C program to illustrate the concept of 2D Reflection.

**Multimedia:**

11. Create a Sunflower using Adobe Photoshop.
12. Create a Poster using Adobe Photoshop.
13. Enable an onion skin concept using Adobe Photoshop.
14. Create a Calendar using Adobe Photoshop.
15. Create Morphing effects by using Adobe Photoshop.
16. Create a Webpage using Adobe Photoshop.
17. Animate a Flying Butterfly using Macromedia Flash 8.
18. Animate shapes using Macromedia Flash 8.
19. Animate text using Macromedia Flash 8.
20. Animate a Fog effect using Macromedia Flash 8.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**Skill Based MAJOR ELECTIVE I - VISUAL BASIC LAB**  
**Semester V**

**Credit: 2**

**Subject Code: 14UCTSA01**

**Total Hours: 13**

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

- The ability to develop applications using Visual Basic.

1. Create a program to perform arithmetic operations.
2. Create a program to count the number of characters in the given String.
3. Create a program for application form of UG courses in visual basic.
4. Create a program to perform arithmetic operations using calculator.
5. Create a program to perform various string functions.
6. Create a program to select items from the list box.
7. Create a program to perform Quiz in visual basic.
8. Create a program to compute simple interest and compound interest in visual basic.
9. Create a menu editor form in visual basic.
10. Create an application to Maintain Student Details in visual basic.
11. Create an application to maintain Departmental store Details in visual basic.
12. Create an application to maintain Library Details in visual basic.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**Skill Based MAJOR ELECTIVE LAB I - FLASH**  
**Semester V**

**Subject Code: 14UCTSB01**

**Credit: 2**

**Total Hours: 13**

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

- The ability to write programs in Flash.

- Volcano Eruption
- Drawing and Creating Text with Effects
- Rotating Globe
- Fog Effect
- Lightning Effect
- Animated Effect
- Raining Effect

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT27 & VB.NET PROGRAMMING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Semester:</b><br>VI                     |
| <b>Hrs/Week:</b>                | 6 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Credit:</b> 3                           |
| <b>Objectives</b>               | To extend knowledge about IDE of Microsoft Visual Basic.NET, Control Structures, Procedures and Arrays, Files and Streams, ADO.NET and Databases.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <p><b>Introduction to Visual Basic .NET:</b> Visual Basic .NET- Introduction to Microsoft .NET- .NET Framework and the common language runtime.</p> <p><b>Introduction to the Visual Studio .NET IDE:</b> Introduction – Overview of the visual studio .NET IDE - Menu bar and Toolbar –Visual Studio.NET IDE windows.</p> <p><b>Introduction to Visual Basic Programming:</b> Introduction – simple programs – memory concepts- Arithmetic - Decision Making – Using a dialog to display a message.</p>                                                                                                                                           | 15                                         |
| <b>Unit II</b>                  | <p><b>Control Structures:</b> Introduction – Control Structures- if/then selection structure-if/then/else Selection Structure – While, Do while/loop, Do Until/Loop Repetition Structures – Assignment Operators – For Next – Select Case – do/loop while – do/loop until – exit key word – logical operators.</p> <p><b>Procedures:</b> Introduction – Modules, classes and procedures – sub procedures – function procedures – methods – Arguments Promotion – Option Strict and Data type conversions – value types and reference types – passing arguments: pass – by-value vs. pass-by-reference – duration of identifiers – scope rules.</p> | 16                                         |
| <b>Unit III</b>                 | <p><b>Arrays:</b> Introduction - arrays - declaring and allocating arrays - examples - passing arrays to procedures - By Val vs By Ref. – for each/next repetition structure.</p> <p><b>Graphical user interface concepts:</b> Introduction – windows forms – event handling model – control properties and layout – labels, textboxes and buttons – group boxes and panels – checkboxes and radio buttons – picture boxes – mouse</p>                                                                                                                                                                                                             | 16                                         |

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|                | event handling – keyboard event handling.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |
| <b>Unit IV</b> | <p>Menus – Link labels – List boxes and Checked list boxes – Combo boxes – Tree views – List views – Tab control –MDI windows – Visual inheritance – User defined controls.</p> <p><b>Files and Streams:</b> Introduction – Data Hierarchy – Files and Streams – Classes File and Directory – Creating a Sequential-Access File – Reading data from a Sequential-Access File - Random-Access Files - Creating a Random-Access File - Writing Data Randomly to a Random-Access File - Reading Data Sequentially from a Random-Access File.</p> | 15 |
| <b>Unit V</b>  | <p><b>Database, SQL and ADO. NET:</b> Introduction – relational database model- SQL – ADO.NET object model – programming with ADO.NET – extracting from a database – modifying a database - reading and writing XML files.</p> <p>ASP.NET, web forms and web controls: Introduction – simple HTTP transaction – system architecture – web controls – session tracking.</p>                                                                                                                                                                    | 16 |

**Text Book:**

1. H.M. Deitel, P.J.Deitel, T.R.Nieto, “Visual Basic.NET How to Program”, Pearson Education, 2<sup>nd</sup> Edition, ISBN-13: 9780130389374.

**Reference Books:**

1. Kogent Learning Solutions Inc., “Net 3.5 Programming: Covering .Net Framework”, Dreamtech Press, 1<sup>st</sup> Edition, 2010, ISBN-13:9788177228342.
2. Bill Evjen, Jason Beres, et.al, “Visual Basic.Net Programming – Black Book”, Wiley Dream Tech India (p) Ltd. ISBN: 81-265-0254-1.
3. Tim Anderson, “VB.Net programming in Easy Steps”, Dream Tech, 1<sup>st</sup> Edition, ISBN-13: 9788177221930.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                    |                                            |
| <b>Course</b>                   | B. Sc. C. T                                                                                                                                                                                                                                                                                                                                            | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT28 & EMBEDDED SYSTEMS                                                                                                                                                                                                                                                                                                                             | <b>Semester:</b><br>VI                     |
| <b>Hrs/Week:</b>                | 6 Hrs                                                                                                                                                                                                                                                                                                                                                  | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To teach essentials about Embedded Systems on chip, Device Drivers and Interrupt Service Mechanism and Real time operating systems.                                                                                                                                                                                                                    |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                         | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Introduction to Embedded System:</b> Embedded System – Processor Embedded into the System – Embedded Hardware units and Devices in a System – Embedded Software in a system – Examples of embedded system – Embedded system on chip and use of VLSI circuit - Classification of embedded systems – Skills required for an embedded System Designer. | 16                                         |
| <b>Unit II</b>                  | <b>Devices and buses for device networks:</b> I/O Types and Examples – Serial Communication devices: Synchronous, Iso-Synchronous and Asynchronous communication from serial devices – Parallel Device Ports - Timer and counting devices – Watchdog timer – Real time clock – Network Embedded Systems – Serial Bus Communication Protocol.           | 15                                         |
| <b>Unit III</b>                 | <b>Device drivers and Interrupts servicing mechanism:</b> Device drivers – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency – Device Driver Programming: – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD.                                          | 16                                         |
| <b>Unit IV</b>                  | <b>Programming concepts and embedded programming in C and C++:</b> Embedded programming in C++ and in Java. <b>Program modeling concepts in single and multi processor systems:</b> Program Models – DFG Models – State Machine Programming Models for Event-controlled Program Flow – Modeling of Multiprocessor Systems                              | 15                                         |

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| <b>Unit V</b> | <b>Inter – process communication and synchronization of processes. Tasks and threads:</b> Multiple processes in an application – Multiple Threads Shared Data – Inter process communication. <b>Real time operating systems:</b> Operating system services – I/O subsystem – Real time operating systems – Basic Design using RTOS – RTOS Task scheduling Models, Interrupt Latency and Response of the Tasks as Performance Metrics. | 16 |
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**Text Book:**

1. Raj Kamal, “Embedded Systems – Architecture, Programming and Design”, TMH, 2<sup>nd</sup> Edition, Tenth Reprint 2011, ISBN-13:978-0-07-066764-8.

**Reference Books:**

1. Daniel w. Lewis, “Fundamentals of Embedded Software”, PHI Education Publications, 2007 Edition, ISBN: 81-7808-604-2.
2. Shibu K V, “Introduction to Embedded Systems”, McGraw Hill Education, 1<sup>st</sup> Edition, 2009, ISBN-13: 9780070145894.

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| <b>Department</b>               | Computer Technology                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                            |
| <b>Course</b>                   | B. Sc. (C. T)                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Effective From the Year:</b><br>2016-17 |
| <b>Subject Code &amp; Title</b> | 14UCT29 & INFORMATION SECURITY                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Semester:</b><br>VI                     |
| <b>Hrs/Week:</b>                | 6 Hrs                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Credit:</b> 5                           |
| <b>Objectives</b>               | To develop the knowledge about Network Security and Cryptography, Asymmetric Key Algorithms, Internet Security Protocols Intrusion Detection Systems, Network management and electronic mail policy.                                                                                                                                                                                                                                                           |                                            |
| <b>Unit</b>                     | <b>Content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Hrs</b>                                 |
| <b>Unit I</b>                   | <b>Attacks On Computers And Computer Security:</b> Introduction –Need For Security – Security Approaches -Principles Of Security –Types Of Attacks.<br><b>Cryptography :</b> Concepts and Techniques - Introduction – Plain Text and Cipher Text – Substitution Techniques - Transposition Techniques – Encryption and Decryption – Symmetric and Asymmetric Key Cryptography – Steganography – Key Range And Key Size.                                        | 15                                         |
| <b>Unit II</b>                  | <b>Symmetric Key Algorithms:</b> Introduction – Algorithm Types And Modes – An Overview Of Symmetric Key Cryptography – <b>Data Encryption Standard (DES):</b> Mechanism of DES – RC5 – Blowfish. <b>Asymmetric Key Algorithms:</b> Digital Signature And RSA: Introduction – Brief History Of Asymmetric Key Cryptography – An Overview Of Asymmetric Cryptography - The RSA Algorithm – Digital Signatures – Knapsack Algorithm.                             | 16                                         |
| <b>Unit III</b>                 | <b>Digital Certificate And Public Key Infrastructure (PKI):</b> Introduction – Digital Certificates – Private Key Management- The PKIX Model – Creating Digital Certificates Using JAVA. <b>Internet Security Protocols:</b> Introduction – Basic Concepts – Secure Socket Layer – (SSL) – Secure Hyper Text Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – <b>Secure Electronic Transaction (SET):</b> Introduction – Participants – SET Process. | 16                                         |
| <b>Unit IV</b>                  | <b>Email Security: PGP</b> – working of PGP - S / <b>MIME: Introduction</b> – Cryptographic Algorithms used in S/MIME – Security in GSM –Security in 3G. <b>User Authentication And Kerberos:</b> Introduction – Authentication                                                                                                                                                                                                                                | 15                                         |

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|               | Basics – <b>Passwords:</b> Introduction – Clear Text Passwords – Certificate Based Authentication – Biometric Authentication – Key Distribution Centre – Security Handshake Pitfalls – Single Sign On (SSO) Approaches.                                                                                                                                                                                                                      |    |
| <b>Unit V</b> | <b>Cryptography In JAVA, .NET, And Operating System:</b> Introduction – Cryptographic Solution Using JAVA – Cryptographic Solutions Using Microsoft .NET Framework – Database Security. <b>Network Security Firewalls And Virtual Private Networks (VPN):</b> Introduction – Brief Introduction To TCP/IP – <b>Fire Walls:</b> Introduction – Types of Firewalls: Packet Filters – IP Security – Virtual Private Networks (VPN) – Intrusion. | 16 |

#### Text Book:

1. Atul Kahate, “Cryptograpy And Network Security”, 2<sup>nd</sup> Edition, Tata McGraw-Hill Publication, 2007, ISBN-13: 9780070648234.

#### Reference Books:

1. Mark Rhodes-Ousley, Roberta Bragg, Keith Strassberg, “Network Security: The Complete Reference”, 2004, Tata McGraw-Hill. ISBN: 0-07-222697-8.
2. William Stallings, “Cryptography and Network Security Principles and Practices”, 4<sup>th</sup> Edition, 2006, ISBN: 978-81-203-3018-4.
3. Brijendra Singh “Network Security and Management”, 2<sup>nd</sup> Edition, PHI Publication 2009, ISBN - 13: 9788120339101.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**PROGRAMMING LAB IX (VB.NET PROGRAMMING)**  
**Semester VI**

**Subject Code: 14UCT30**

**Credit: 2**

**Total Hrs: 65**

**VB.NET – Console Application**

1. Create a Console Application for a simple stack operation in VB.Net
2. Create a Console Application for a simple queue operation in VB.Net
3. Develop a console application to illustrate the concept of exception handling using VB.Net
4. Develop a console application to illustrate the concept of Hash table using VB.Net
5. Develop a console application to illustrate the concept of Inheritance
6. Develop a console application to illustrate the concept of File handling

**VB.NET – Windows Application**

7. Develop a Windows Form Application to generate the Bio-Data of a student
8. Develop a Windows Form Application to illustrate the concept of Tree-Node Control
9. Develop a Windows Form Application to perform the operations of a calculator
10. Develop a Windows Form Application to calculate and generate a telephone bill
11. Develop a Windows Forms application to create and generate an E.B. Bill
12. Develop a Windows Form application to for performing the operations of a Banking System.
13. Develop a windows forms application to create a notepad.
14. Create a Windows form application to develop a Basic Login form
15. Create a Windows Form application to develop an Employee Pay slip
16. Create a Windows Form application to develop a Vehicle invoice generation System
17. Create a Windows Form application to develop a Library book issue details system

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**GUIDELINES FOR INDUSTRY ORIENTED PRACTICALS**  
**Semester VI**

**Subject Code: 14UCT31**

**Credit: 5**

**Objectives:**

- The aim of the Project work is to acquire practical knowledge on the implementation of the programming concepts studied.
- Each student should carry out individually one Project Work and it may be a work using the software packages that they have learned or the implementation of Concepts from the papers studied or implementation of any innovative idea.
- The Project work should be compulsorily done in the college only under the supervision of the Department staff concerned.

**University Exam will be conducted as follows.**

- Both the Internal (Respective Guides) and External Examiners should Conduct the Viva-Voce Examination at the last day of the practical session.
- No candidate will be allowed to change the title of the Project work after the completion of End- semester Viva.
- For those absent on genuine grounds a common supplement End-Semester Viva-voce may be conducted at our College by obtaining prior permission from the COE on the recommendations from the HOD before the commencement of the next semester Final Viva.
- Out of 100 marks, 60 for Project Evaluation and 40 for Viva.
- For awarding a pass, a candidate should have obtained 40% of the Total 100 marks.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**Skill Based MAJOR ELECTIVE II - DREAMWEAVER LAB**  
**Semester V I**

**Subject Code: 14UCTSA02**

**Credit: 2**

**Total hrs: 13**

Using Dreamweaver,

- Creating a picture gallery
- Creating template
- Creating CSS text rollover
- Creating Mail-To links
- Creating website
- Creating a link to different pages from the same image
- List Menus
- Submit buttons
- Creating Links without an Underline using CSS Styles
- Using CSS Styles
- Working PHP, CSS, JavaScript, JSP, HTML in Dream Weaver.

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**DEPARTMENT OF COMPUTER TECHNOLOGY**  
**Skill Based MAJOR ELECTIVE II - PHOTOSHOP LAB**  
**Semester VI**

**Subject Code: 14UCTSB02**

**Credits: 2**

**Total Hrs: 13**

1. Convert Black and White Photo to Color Photo using Photoshop.
2. Create an animation to represent the growing Moon.
3. Create an animation to indicate a Ball bouncing on Steps.
4. Remove background noise from a photograph.
5. Create an animated cursor.
6. Fill text in with an image.
7. Create a drop shadow and scale its effects on a layer.
8. Adjust the perspective of an image using the Crop tool.
9. Create a mask based on color and change that color.
10. Create a Web Page using Photoshop.

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