



**THIAGARAJAR COLLEGE MADURAI - 625009**

(An Autonomous Institution, affiliated to Madurai Kamaraj  
University)

(Re-Accredited with 'A' Grade by NAAC)

**Department of Computer Application  
and Information Technology**

# **B.C.A (SF)**



**THIAGARAJAR COLLEGE, MADURAI- 9**  
**(Re-Accredited with 'A' Grade by NAAC)**  
**DEPARTMENT OF COMPUTER APPLICATION &**  
**INFORMATION TECHNOLOGY**  
**(For those who join in 2017 and after)**  
**COURSE STRUCTURE- BCA (w.e.f. 2017 - 2020 batch onwards)**

**Semester – I**

| Course       | Code No | Subject                                      | Contact Hrs/Week | Credits   | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total      |
|--------------|---------|--|------------------|-----------|--------------------------|--------------|--------------|------------|
| Part I       | P111    | Tharkkala Ilakkiyam                          | 5                | 3         | 75                       | 25           | 75           | 100        |
| Part II      | P211    | Communicative English - I                    | 4                | 3         | 60                       | 25           | 75           | 100        |
| Core 1       | SMM11   | Digital Principles and Computer Organization | 4                | 4         | 60                       | 25           | 75           | 100        |
| Core 2       | SMM12   | C Programming                                | 4                | 4         | 60                       | 25           | 75           | 100        |
| Core Lab 1   | SMML11  | C Programming Lab                            | 3                | 2         | 45                       | 40           | 60           | 100        |
| Core Lab 2   | SMML12  | Multimedia Lab                               | 3                | 2         | 45                       | 40           | 60           | 100        |
| Allied 1     | SAM11   | Discrete Mathematics                         | 5                | 5         | 75                       | 25           | 75           | 100        |
| AECC         | ES      | EVS  | 2                | 2         | 30                       | 15           | 35           | 50         |
| <b>Total</b> |         |  | <b>30</b>        | <b>25</b> | <b>450</b>               | <b>220</b>   | <b>530</b>   | <b>750</b> |

**Semester-II**

| Course     | Code No | Subject  | Contact Hrs/Week | Credits | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total |
|------------|---------|--|------------------|---------|--------------------------|--------------|--------------|-------|
| Part I     | P121    | Tamil  | 5                | 3       | 75                       | 25           | 75           | 100   |
| Part II    | P221    | English  | 4                | 3       | 60                       | 25           | 75           | 100   |
| Core 3     | SMM21   | Microprocessor and Assembly Language Programming | 4                | 4       | 60                       | 25           | 75           | 100   |
| Core 4     | SMM22   | Programming in C++                               | 4                | 4       | 60                       | 25           | 75           | 100   |
| Core Lab 3 | SMML21  | Programming in C++ Lab                           | 3                | 2       | 45                       | 40           | 60           | 100   |
| Core Lab 4 | SMML22  | MS-Office Lab                                    | 3                | 2       | 45                       | 40           | 60           | 100   |
| Allied 2   | SAM21   | Operations Research                              | 5                | 5       | 75                       | 25           | 75           | 100   |
| AECC       | SMMAE   | Effective  | 2                | 2       | 30                       | 15           | 35           | 50    |

|              |     |                       |           |           |            |            |            |            |
|--------------|-----|-----------------------|-----------|-----------|------------|------------|------------|------------|
|              | C21 | Communicative English |           |           |            |            |            |            |
| <b>TOTAL</b> |     |                       | <b>30</b> | <b>25</b> | <b>450</b> | <b>220</b> | <b>530</b> | <b>750</b> |

**Semester – III**

| Course          | Code No  | Subject                                     | Hours     | Credits   | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total      |
|-----------------|----------|---|-----------|-----------|--------------------------|--------------|--------------|------------|
| Core 5          | SMM31    | Relational Database Management System       | 5         | 4         | 75                       | 25           | 75           | 100        |
| Core 6          | SMM32    | Java Programming                            | 5         | 5         | 75                       | 25           | 75           | 100        |
| Core Lab 5      | SMML31   | RDBMS Lab                                   | 4         | 2         | 60                       | 40           | 60           | 100        |
| Core Lab 6      | SMML32   | Java Programming Lab                        | 4         | 2         | 60                       | 40           | 60           | 100        |
| Core Elective 1 | SMME31   | Options given                               | 5         | 5         | 75                       | 25           | 75           | 100        |
| Allied 3        | SAM31    | Numerical Methods                           | 5         | 5         | 75                       | 25           | 75           | 100        |
| NME-I           | SMMNME31 | PC Hardware Assembling and Trouble Shooting | 2         | 2         | 30                       | 15           | 35           | 50         |
| <b>TOTAL</b>    |          |   | <b>30</b> | <b>25</b> | <b>450</b>               | <b>195</b>   | <b>455</b>   | <b>650</b> |

**Semester – IV**

| Course     | Code No | Subject                     | Hours | Credits | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total |
|------------|---------|-----------------------------|-------|---------|--------------------------|--------------|--------------|-------|
| Core 7     | SMM41   | Software Engineering        | 5     | 5       | 75                       | 25           | 75           | 100   |
| Core 8     | SMM42   | Data Structures             | 5     | 4       | 75                       | 25           | 75           | 100   |
| Core Lab 7 | SMML41  | Data Structures Lab Using C | 4     | 2       | 60                       | 40           | 60           | 100   |
| Core Lab 8 | SMML42  | Web Designing With PHP Lab  | 4     | 2       | 60                       | 40           | 60           | 100   |
| Core       | SMME41  | Options                     | 5     | 5       | 75                       | 25           | 75           | 100   |

|              |          |                       |           |           |            |            |            |            |
|--------------|----------|-----------------------|-----------|-----------|------------|------------|------------|------------|
| Elective 2   |          | given                 |           |           |            |            |            |            |
| Allied 4     | SAM41    | Quantitative Aptitude | 5         | 5         | 75         | 25         | 75         | 100        |
| SEC-1        | SMMSEC41 | Options given         | 2         | 2         | 30         | 15         | 35         | 50         |
| <b>TOTAL</b> |          |                       | <b>30</b> | <b>25</b> | <b>450</b> | <b>195</b> | <b>455</b> | <b>650</b> |

**Semester – V**

| Course       | Code No  | Subject                        | Hours     | Credits   | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total      |
|--------------|----------|--------------------------------|-----------|-----------|--------------------------|--------------|--------------|------------|
| Core 9       | SMM51    | Data Communication and Network | 5         | 4         | 75                       | 25           | 75           | 100        |
| Core 10      | SMM52    | .Net Programming               | 5         | 4         | 75                       | 25           | 75           | 100        |
| Core 11      | SMM53    | Operating System               | 5         | 4         | 75                       | 25           | 75           | 100        |
| Core Lab 9   | SMML51   | .Net Programming Lab           | 5         | 2         | 75                       | 40           | 60           | 100        |
| Project      | SPJ      | Project                        | 6         | 3         | 90                       | 25           | 75           | 100        |
| NME-II       | SMMNME51 | Digital Image Processing       | 2         | 2         | 30                       | 15           | 35           | 50         |
| VE           | VE       | Value Education                | 2         | 1         | 30                       | 15           | 35           | 50         |
| <b>TOTAL</b> |          |                                | <b>30</b> | <b>20</b> | <b>450</b>               | <b>170</b>   | <b>430</b>   | <b>600</b> |

**Semester – VI**

| Course      | Code No | Subject                            | Hours | Credits | Total No of Hrs Allotted | Max Marks CA | Max Marks SE | Total |
|-------------|---------|------------------------------------|-------|---------|--------------------------|--------------|--------------|-------|
| Core 12     | SMM61   | Data Mining                        | 6     | 4       | 90                       | 25           | 75           | 100   |
| Core 13     | SMM62   | Mobile Application Development     | 6     | 4       | 90                       | 25           | 75           | 100   |
| Core 14     | SMM63   | Python Programming                 | 5     | 4       | 75                       | 25           | 75           | 100   |
| Core Lab 10 | SMML61  | Mobile Application Development Lab | 6     | 3       | 90                       | 40           | 60           | 100   |
| Core Lab 11 | SMML62  | Python Programming Lab             | 5     | 2       | 75                       | 40           | 60           | 100   |
| SEC-II      | SMMSE   | Part-V                             | 2     | 2       | 30                       | 30           | 15           | 35    |

|  |     |         |           |            |            |            |            |            |
|--|-----|---------|-----------|------------|------------|------------|------------|------------|
|  | C61 |         |           |            |            |            |            |            |
| Part _V                                    |     | Part _V |           | 1          |            |            |            |            |
| <b>TOTAL</b>                               |     |         | <b>30</b> | <b>20</b>  | <b>450</b> | <b>185</b> | <b>360</b> | <b>535</b> |
| <b>TOTAL CREDITS FOR SEMESTERS I to VI</b> |     |         |           | <b>140</b> |            |            |            |            |

### Discipline – 1

- 1) Digital Principles and Computer Organization
- 2) Microprocessor and Assembly Language Programming
- 3) Relational Database Management System
- 4) Operating System
- 5) Data Communication and Network
- 6) Software Engineering
- 7) Data Mining
- 8) Data Structures

### Discipline – 2

- 1) C Programming
- 2) Programming in C++
- 3) Java Programming
- 4) .Net Programming
- 5) Python Programming
- 6) Mobile Application Development

### Discipline – 3

- 1) Discrete Mathematics
- 2) Operations Research
- 3) Numerical Methods
- 4) Quantitative Aptitude

### SEC

- 1) Latex Lab
- 2) R-Tool Lab
- 3) Programming with SCILAB
- 4) Fundamentals of Big Data
- 5) **Data Mining Lab** ( WEKA Tool )
- 6) **Advanced Java Programming**
- 7) PC Hardware Assembling and Trouble Shooting-NME I
- 8) Digital Image Processing-NME II

### Core Electives

- 1) Cloud Computing
- 2) **Web Designing With PHP**
- 3) Virtual Reality
- 4) Computer Algorithms
- 5) Artificial Intelligence
- 6) **Logical Reasoning**



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|                           |   |                    |     |
|---------------------------|---|--------------------|-----|
| <b>Course</b>             | Core 1  | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | I Year  | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | I   | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | P111  | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Digital Principles and<br>Computer Organization | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Demonstrate knowledge of binary number theory and Boolean algebra.
2. Analyze and design combinational systems using standard gates.
3. Design simple combinational and sequential digital functions.
4. Understand the architecture of modern computer.

**Unit-I :**

**10hours**

**Digital Logic:** The Basic Gates - Universal Logic Gates - AND-OR Invert Gates. Combinational Logic Circuits: Booleans Laws and Theorems - Sum-of-Products Method - Truth Table to Karnaugh Map - Pairs, Quads, and Octets - Karnaugh Simplifications - Don't care Conditions - Product of Sums Method - Product of sums Simplification. Number Systems and Codes: Binary Number System - Radix Representation of Numbers - Binary-to-decimal Conversion - Decimal-to-binary Conversion - Octal Numbers - Hexadecimal Numbers - The ASCII Code - The Excess-3 Code - The Gray Code.

**Unit-II:**

**12hours**

**Data processing circuits:** Multiplexers - Demultiplexers - 1-of-16 Decoder - BCD-to-decimal Decoders - Seven-segment Decoders - Encoders - Exclusive-OR Gates - Parity Generators and Checkers. Arithmetic Circuits: Binary Addition - Binary Subtraction - Unsigned Binary Numbers - Sign-magnitude Numbers - 2's Complement Representation - 2's Complement Arithmetic - Arithmetic Building Blocks - The Adder – Subtractor. FLIP-FLOPs: RS FLIP-FLOPs - Edge-triggered RS FLIP-FLOPs - Edge-triggered D FLIP-FLOPs - Edge-triggered JK FLIP-FLOPs - JK Master-Slave FLIP-FLOPs.

**Unit-III:****14hours**

**Basic Structure of Computers:** Computer Types - Functional Units - Basic Operational Concepts - Bus Structures - Historical Perspective. Machine Instructions and Programs: Memory Locations and Addresses - Byte Addressability - Big-endian and Little-endian Assignments - Addressing Modes. Basic Processing Unit: Some Fundamental Concepts - Execution of a Complete Instruction -Hardwired Control - Microprogrammed Control.

**Unit-IV:****13hours**

**Input/Output Organization:** Accessing I/O devices - Interrupts - Direct Memory Access. The Memory System: Some Basic concepts - Semiconductor RAM Memories - Read-Only Memories -Speed, Size, and Cost - Cache Memories - Virtual memories.

**Unit-V:****11hours**

**Arithmetic:** Design of Fast Adders - Multiplication of Positive Numbers - Integer Division. Pipelining: Basic Concepts - Data Hazards - Instruction Hazards. Embedded Systems: Examples of Embedded Systems - Processor Chips for Embedded Applications.

**Text Books:**

1. Donald P. Leach , Albert Paul Malvino, Goutam Saha, 2014, Digital Principles and Applications, 8<sup>th</sup> edition, Tata McGraw – Hill Publication, New Delhi.
2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 2013, Computer Organization, 5<sup>th</sup> edition, Tata McGraw – Hill Publication, New Delhi.

| Unit | Chapters / Sections  |
|------|--|
| I    | Book 1: 2 (2.1 - 2.3), 3 (3.1-3.8),5 (5.1 - 5.3, 5.5-5.10)             |
| II   | Book 1: 4 (4.1-4.8), 6 (6.1-6.8), 8 (8.1, 8.3-8.5, 8.8)                |
| III  | Book 2: 1 (1.1-1.4, 1.8), 2 (2.2.1, 2.2.2, 2.5),7 (7.1, 7.2, 7.4, 7.5) |
| IV   | Book 2: 4 (4.1 ,4.2, 4.4),5 (5.1-5.5, 5.7)                             |
| V    | Book 2: 6 (6.2, 6.3, 6.6) ,8 (8.1-8.3),9 (9.1, 9.2)                    |

**Reference Books:**

1. Morris Mano, 2012, Digital Logic & Computer Design, 5<sup>th</sup> edition, Prentice Hall of India publishing.
2. John D. Carpinelli, 2012, Computer System Organization and Architecture, Pearson Indian Education Service Private Limited, Chennai.
3. Morris Mano, 2011, Computer System Architecture, 4<sup>th</sup> edition, Prentice Hall of India publishing.

**Course Designers**

1. Mrs. R.Umamaheswari
2. Dr. S. Abirami

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|                           |                  |                    |     |
|---------------------------|------------------|--------------------|-----|
| <b>Course</b>             | Core2            | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | I Year           | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | I                | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM12            | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Programming in C | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand and apply the basics of programming concepts in C.
2. Understand the different constructs like "for", "do...while" and "while" loops.
3. Apply the concepts like array, pointers, structure and files.

**Unit - I:**

**12hours**

**Overview of C:** History of C - Importance of C - Sample Programs 1,2,3,4 and 5-Basic Structure of C Programs - Programming Style - Executing a 'C' Program. Constants, Variables and Data types: Introduction - Character Set - C Tokens - Keywords and Identifiers - Constants - Variables - Data types - Declaration of Variables - Declaration of Storage Class - Assigning Values to Variables - Defining Symbolic Constants - Declaring a Variable as constant-Declaring variable as Volatile. Operators and Expression

**Unit - II:**

**12hours**

**Managing Input and Output Operations:** Introduction - Reading a Character - Writing a Character-Formatted Input-Formatted Output. Decision Making and Branching: Introduction-Decision making with if Statement - Simple if statement - The if...else Statement-Nesting of if...else Statements - The else if ladder - The Switch Statement - The ?: Operator - The goto Statement. Decision Making and Looping: Introduction- The while Statement-The do Statement-The for Statement-Jumps in Loops.

**Unit-III**

**12hours**

**Array:** Introduction - One-dimensional Arrays - Declaration of One-dimensional Arrays - Initialization of One-dimensional Arrays - Two-dimensional Arrays - Initializing Two-dimensional Arrays - Multi-dimensional Arrays - Dynamic Arrays. Character Arrays and Strings: Introduction -Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings to Screen - Arithmetic Operation on Characters - Putting Strings Together – Comparison of Two Strings - String Handling Functions.

**Unit - IV:****12hours**

**User-Defined Functions:** Introduction - Need for User Defined Functions - A Multi-Function Program - Elements of User-Defined Functions – Definition of functions- Returns Values and Their Types - Function Calls – Function Declaration - Category of Functions - No Arguments and No Return Values - Arguments but No Return Values - Argument with Return Values - No Argument but Returns a Value - Functions that Return Multiple Values - Nesting of Functions - Recursion- Passing Arrays to Functions - Passing Strings to Function - The Scope, Visibility and Lifetime of Variables .Structures and Union.

**Unit - V:****12hours**

**Pointers:** Introduction - Understanding Pointers - Accessing the Address of a Variable -Declaring Pointer Variables - Initialization of Pointer Variables - Accessing a Variable through its Pointer - Chain of Pointers. Dynamic Memory Allocation and Linked List: Introduction - Dynamic Memory Allocation - Allocating a Block of Memory: malloc - Allocating Multiple Blocks of Memory: calloc, Releasing the Used Space:free, Altering the Size of a Block: realloc. File Management in C.

**Text Book:**

Balagurusamy E, 2017, Programming in ANSI C, 7<sup>th</sup> edition, Tata McGraw – Hill Education Private Limited, New Delhi.

| Unit | Chapters / Page Number              |
|------|-------------------------------------|
| I    | 1(1-13),2(22-44),3(51-69)           |
| II   | 4(81-94),5(111-133),6(149-172)      |
| III  | 7(189-213),8(234-249)               |
| IV   | 9(267-298),10(320-339)              |
| V    | 11(353-361),12(391-409),13(415-420) |

**Reference Books:**

1. Yashwant Kanetkar, 2016. Let Us C, 14<sup>th</sup> edition, BPB Publications, New Delhi.
2. Byron S. Gottfried, 2010. Programming with C, 3<sup>rd</sup> edition, Tata McGraw – Hill Publications, New Delhi.
3. Ananthi Sheshasaayee, 2009. Programming Language C with Practical, Margham Publication, Chennai.

**Course Designers**

1. Dr. V. T. Meenatchi
2. Mr. P. Muthumariappan

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|                           |                      |                    |     |
|---------------------------|----------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 1           | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | I Year               | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | I                    | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML11               | <b>Hours/ Week</b> | 3   |
| <b>Title of the Paper</b> | Programming in C Lab | <b>Credits</b>     | 2   |

**Simple Programs:**

1. Finding the largest, smallest among three numbers
2. Finding the roots of a quadratic equation
3. Generate the Fibonacci sequence
4. Convert a decimal number to its binary equivalent

**Control Structures:**

1. Reverse a number
2. Find whether a number is prime or not
3. Find whether a given number is a perfect or not
4. Find the factorial of a number

**Arrays:**

1. Program for Sorting
2. Program to search an element
3. Find whether given string is a palindrome or not
4. Perform the addition of two matrices
5. Perform subtraction of two matrices
6. Perform multiplication of two matrices

**Functions:**

1. Program to apply Recursion
2. Program for Call by Value

**Pointers:**

1. Program to perform addition
2. Program for Call by Reference

**Structures:**

1. Program to print student information using structures
2. Program for Array of structures

**File:**

1. Program for applying File operations
2. Program to get n numbers and find odd and even numbers using file

**Course Designers**

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|                           |                |                    |     |
|---------------------------|----------------|--------------------|-----|
| <b>Course</b>             | Core Lab 2     | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | I Year         | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | I              | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML12         | <b>Hours/ Week</b> | 3   |
| <b>Title of the Paper</b> | Multimedia Lab | <b>Credits</b>     | 2   |

**PHOTOSHOP**

1. To Design a Photoshop using Various selection tools
2. To Create scenery using photo shop brushes
3. To Demonstrate the rules of layer effect
4. To Create text inside a picture
5. To Create a snapshot inside a photo
6. To Coloring a B\W picture
7. To Create photo mount template
8. To Create photo fill template
9. To Create 2D & 3D logos
10. To Animate text using image ready
11. To Create a Christmas tree with blinking lights
12. To Animate a candle flame using liquefy tool
13. To Create slide mount template
14. To Design a visiting card using Photoshop
15. To Design a marriage invitation using Photoshop
16. To create Rain effect using Photoshop
17. To Crop the image using Photoshop
18. To Design Front page of the book using Photoshop
19. To Design a license using Photoshop
20. To Design a ATM card using Photoshop
21. To Design a mark sheet using Photoshop

**FLASH**

1. To Create Animation using motion tween
2. To Create Animation using shape tween
3. To Create Animation using layer
4. To Create Animation of text in multiple layer
5. To Create Masking text by an object
6. To Masking two images
7. To Create Animation using movie clip object
8. To Create Text morphing using flash
9. To Design a car using flash
10. To Bouncing ball using flash

**VIDEO EDITING TOOL (After Effect CS 6)**

1. To Create Double acting using Video Editing Tool
2. To Create Motion poster using Video Editing Tool
3. To Create Video using Video Editing Tool

**Course Designers**

1. Mr. P. Muthumariappan
2. Dr. S. Abirami

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|---------------------------|---|--------------------|-----|
| <b>Course</b>             | Core 3  | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | I Year  | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | II  | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM21   | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Microprocessor and Assembly<br>Language Programming | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the basics of the processors.
2. Develop the assembly level programs.
3. Analyze the architecture of advanced micro processors.

**Unit-I:**

**12hours**

**The 8086 Microprocessor:** Introduction to Microprocessors - Introduction to INTEL 8086 -Introduction to 8086 Instructions - Format of 8086 Instructions - Addressing Modes of the 8086 -Instructions Affecting Flags of 8086 - Classification of 8086 Instructions - Examples of 8086 Assembly Language Instructions - Modular programming - Byte and String Manipulation in 8086 - Interrupt and Interrupt Service Routine in 8086 - Classification of Interrupts of 8086 - Priorities of Interrupts of 8086 -Implementing the Interrupt Scheme in 8086.

**Unit-II:**

**10hours**

**Introduction to Assembly-Language Programming:** Levels of Programming - Flow Chart - Variables and Constants Used in Assemblers - Assembler Directives - Assembly-Language Program Development Tools – Editor - Assembler - Library Builder – Linker - Debugger – Simulator - Emulator - Hand Coding of Assembly-Language Programs - Examples of 8086-Assembly Language Programs

**Unit-III:**

**13hours**

**Memory and IO Interfacing:** Introduction to Memory - Memory Interfacing- IO Interfacing - Parallel Communication Interface- Programmable Peripheral Interface(INTEL 8255) -Programmable Timer(INTEL 8254): Pins-Signals-and Functional block diagram of 8254 - Interfacing 8254 with the 8086 processor - Programming 8254 - Operating modes of 8254 - Programmable Interrupt Controller(INTEL 8259): Pins-Signals and Functional block diagram of 8259 - Interfacing 8259 with 8086 processor - Processing of Interrupts by 8259 - Programming 8259.

**Unit-IV:****12hours**

**THE 8051 Microcontroller:** Introduction to Microcontrollers - Introduction to the INTEL 8051 Microcontroller - Special Function Registers(SFR) of 8051- IO Ports and Circuits of 8051- Addressing Modes in 8051- Instructions Affecting Flags of 8051- Classification of 8051 Instructions - Assembly-Language Programming in 8051- Examples of Assembly Language Programs in 8051.

**Unit-V:****13hours**

**The 8086 microprocessor based system and advanced processor:** Pins and Signals of INTEL 8086 - System Design Using the 8086 Microprocessor - System Bus Structure - Basic Configurations of 8086 Microprocessor System - IO Programming - Introduction to Multiprogramming - Multiprocessor Configurations - Introduction to Advanced Processors.

**Text Book:**

Nagoor Kani, 2016, Microprocessor and Microcontroller, McGraw – Hill Education (India), Private Limited.

| Unit | Chapters/ Section       |
|------|-------------------------|
| I    | 1(1.1-1.8, 1.11-1.16)   |
| II   | 1(1.9,1.10,1.17,1.18)   |
| III  | 3(3.1-3.3,3.5,3.9,3.11) |
| IV   | 4(4.1- 4.9)             |
| V    | 2(2.1-2.4,2.6-2.9)      |

**Reference Books:**

1. Krishna Kant, 2016, Microprocessor and Microcontrollers Architecture, Programming and System Design 8085,8086,8051,8096, 2<sup>nd</sup> edition, PHI Learning Private Limited, New Delhi.
2. Douglas V Hall, SSSP Rao, 2016(8<sup>th</sup> Reprint), Microprocessor and Interfacing, Hill Education (India), Private Limited.
3. Ramesh S. Gaonkar, 2013, Microprocessor Architecture, Programming and Application with the 8085.
4. [https://www.tutorialspoint.com/assembly\\_programming/assembly\\_variables.htm](https://www.tutorialspoint.com/assembly_programming/assembly_variables.htm)

**Course Designers**

1. Mrs. R.Umamaheswari
2. Dr. V.T. Meenatchi



**THIAGARAJAR COLLEGE, MADURAI- 9**  
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**DEPARTMENT OF COMPUTER APPLICATION &**  
**INFORMATION TECHNOLOGY**  
**(For those who join in 2017 and after)**

|                           |                    |                    |     |
|---------------------------|--------------------|--------------------|-----|
| <b>Course</b>             | Core 4             | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | I Year             | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | II                 | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM22              | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Programming in C++ | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the concepts of oops.
2. Analyze the pros and cons of concepts oops.
3. Realize fundamental data structures.
4. Implement the data structures using C++ for real time applications.

**Unit-I:**

**12hours**

**Principles of Object Oriented Programming:** Software Crisis-Software Evolution- A look at Procedure –Oriented Programming- Object Oriented programming Paradigm-Basic concepts of Object –Oriented Programming-Benefits of Oops-Object-oriented languages- Applications of Oops. Tokens, Expressions and Control Structures: Introduction-Tokens- Keywords-Identifiers and Constants-Basic data types-user Defined data types-Storage classes-Derived Data types-Symbolic Constants-Type compatibility-Declaration of variables- Dynamic initialization of variables-Reference variables-Operators in C++ -Scope Resolution Operator. Classes and objects: Introduction- C Structures Revisited-Specifying a Class- Defining Member Functions-A C++ Program with Class-Making an outside function inline- Nesting of Member Functions-Private Member Functions-Arrays with in a Class-Memory Allocation for objects-Static data member- Static member functions-Array of objects-Object as function argument-Friendly functions-Returning objects-Const member functions.

**Unit-II:**

**12hours**

**Constructors and Destructors:** Introduction-Constructors-Parameterized constructors-Multiple Constructors in a class -Constructors with default Arguments-Dynamic Initialization of objects-Copy Constructor-Dynamic Constructor-Destructors. Operator Overloading and Type Conversions: Introduction- Defining Operator Overloading- Overloading unary operators – Overloading Binary Operators-Overloading Binary operators using friends – Manipulation of strings using operators –Some other operator overloading examples- Rules for overloading operators.

**Unit-III:****12hours**

**Inheritance: Extending Classes:** Introduction-Defining Derived Classes-Single Inheritance-Making a Private Member Inheritable-Multilevel inheritance-Multiple inheritance-Hierarchical inheritance-Hybrid inheritance-Virtual Base Classes- Abstract Classes-Constructors in Derived Classes-Member classes: Nesting of classes. Pointers, Virtual Functions and Polymorphism: Introduction-Pointers-Pointers to Objects-this pointer-Pointers to Derived Classes-Virtual Functions-Pure Virtual Functions-Virtual Constructor and Destructor.

**Unit-IV:****12hours**

**Working with Files:** Introduction-Classes for File Stream Operations-Opening and closing a File-Detecting End-of-File-More about Open( )-File Modes-File Pointers and their Manipulations-Sequential Input and output Operations-Updating a File-Random Access-Error Handling During File Operations-Command Line Arguments.

**Unit-V:****12hours**

**Managing Console I/O Operations:** Introduction-C++ Streams-C++ Stream Classes-Unformatted I/O Operations- Formatted Console I/O Operations-Managing output with Manipulators. Templates-Introduction-Class Templates- Class Templates with multiple Parameters-Function Templates- Function Templates with Multiple Parameters-Overloading of Template Functions-Member Function Templates-Non Type Template Arguments.

**Text Book:**

Balagurusamy. E, 2013, Object Oriented Programming with C++, 6<sup>th</sup> edition, Tata McGraw – Hill Publications.

| UNIT | Chapter /Sections                |
|------|----------------------------------|
| I    | 1,3(3.1 to 3.15), 5(5.1 to 5.17) |
| II   | 6(6.1 to 6.8,6.11),7(7.1 to 7.8) |
| III  | 8, 9                             |
| IV   | 11                               |
| V    | 10,12                            |

**Reference Books:**

1. Well Dale, Jones, 2015, C++ Plus Data structures, 6<sup>th</sup> edition, Bartlett.
2. Yashavant Kanetkar, 2012, Let us C++, Second edition, BPB Publications.
3. Robert Lafore, 2008, Object Oriented Programming in C++, 4<sup>th</sup> edition, Pearson Education.

**Course Designers**

1. Dr. S.Abirami
2. Mrs. R. Umamaheshwari

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|                           |                        |                    |     |
|---------------------------|------------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 3             | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | I Year                 | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | II                     | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML21                 | <b>Hours/ Week</b> | 3   |
| <b>Title of the Paper</b> | Programming in C++ Lab | <b>Credits</b>     | 2   |

### Simple Programs

1. Write a c++ program for List of odd numbers
2. Write a c++ program for Sum of N numbers
3. Write a c++ program for List of factorial values
4. Write a c++ program to print individual Digit to words
5. Write a c++ program for Pascal triangle
6. Write a c++ program to check a given number is Prime or not
7. Write a c++ program for Sum of square of N numbers
8. Write a c++ program for calculating Power value
9. Write a c++ program for Demo for break & continue

### Classes & Object

1. Write a c++ program for simple Pay bill preparation
2. Write a c++ program for Invoice bill generation
3. Write a c++ program for preparing Student mark statement
4. Write a c++ program for finding Cube value using inline function
5. Write a c++ program for deriving Multiplication table
6. Write a c++ program for the demo of Constructor & destructor
7. Write a c++ program for sum of two objects using Friend function

### Polymorphism

1. Write a c++ program for Function overloading process
2. Write a c++ program for unary Operator overloading process
3. Write a c++ program for Binary operator overloading Process

### Inheritance

1. Write a c++ program for Single inheritance
2. Write a c++ program for hybrid inheritance

### Files

1. Write a c++ program for File creation and to list the file content
2. Write a c++ program for File manipulations- Append, Copy, Search

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|                           |               |                    |     |
|---------------------------|---------------|--------------------|-----|
| <b>Course</b>             | Core Lab 4    | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | I Year        | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | II            | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML22        | <b>Hours/ Week</b> | 3   |
| <b>Title of the Paper</b> | MS-Office Lab | <b>Credits</b>     | 2   |

### **MS WORD**

1. Paragraph formatting
2. Newspaper style Document
3. Table creation
4. Mail merge
5. Page formatting & printing

### **MS EXCEL**

1. Worksheet including Formulas
2. Formatting cells
3. Chart creation
4. Functions

### **MS ACCESS**

1. Creating a table
2. Set validation rules
3. Creating forms
4. Creating reports
5. Relationship and queries

### **MS POWERPOINT**

1. Creating presentation
2. Animations
3. Sound
4. Inserting picture

### **Course Designers**

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|                           |                                 |                    |    |
|---------------------------|---------------------------------|--------------------|----|
| <b>Course</b>             | AECC                            | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | I Year                          | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | II                              | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMaec21                        | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Effective Communicative English | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand the concepts of Communication.
2. Analyze strategies of Communication.
3. Realize the importance of reading and understanding.

**Unit-I:**

**15hours**

**Introduction:** Theory of Communication, Types and modes of Communication -  
**Language of Communication:** Verbal and Non-verbal (Spoken and Written) Personal-Social,  
Business Barriers and Strategies-Intra-personal-Inter-personal and Group communication -  
**Speaking Skills:** Monologue –Dialogue- Group Discussion- Effective Communication/ Mis-  
Communication- Interview -Public Speech

**Unit-II:**

**15hours**

**Reading and Understanding** -Close Reading -Comprehension -Summary  
Paraphrasing- Analysis and Interpretation -Translation(from Indian language to English and  
vice-versa)-Literary/Knowledge Texts-Writing Skills -Documenting Report -Writing Making  
notes -Letter writing

**Text Book:**

Dr. Gauri Mishra, DrRanjanaKaul, DrBratiBiswas , 2016, Language through  
Literature , Primus Book

**Reference Book:**

Kumar S.P , 2013, Language Literature and Creativity, Orient Blackswan

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|                           |                                       |                    |     |
|---------------------------|---------------------------------------|--------------------|-----|
| <b>Course</b>             | Core 5                                | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II Year                               | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III                                   | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM31                                 | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Relational Database Management System | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand and apply the basics of database concepts, data models.
2. Understand the transaction management, database architectures.
3. Apply the SQL and PL/ SQL commands.

**Unit-I: 15hours**

**Introduction:** Database-System Applications - Purpose of Database Systems - View of Data - Database Languages - Relational Databases - Database Design - Data Storage and Querying Transaction Management-Database Architecture –Database Users and Administrators - History of Database Systems. Introduction to the Relational Model: Structure of Relational Databases - Database Schema - keys -Schema Diagrams - Relational Query Languages -Relational Operations. Formal Relational Query Languages: The Relational Algebra - Database Design and the E-R Model.

**Unit-II: 15 hours**

**Relational Database Design:** Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional dependencies - Functional dependency Theory - Algorithms for Decomposition - Decomposition Using Multivalued Dependencies. Storage and File Structure.

**Unit-III: 15hours**

**Transactions:** Transaction Concept - A Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation - Serializability. Recovery System: Failure Classification -Storage- Recovery and Atomicity - Recovery Algorithm - Buffer Management -Failure with Loss of Nonvolatile storage.

**Unit-IV: 15hours**

**Database-System Architectures:** Centralized and Client-Server Architectures - Server System Architectures -Parallel Systems - Distributed Systems - Parallel Databases: Introduction -I/O Parallelism - Interquery parallelism - Intraquery parallelism –Intraoperation parallelism –Interoperation parallelism- Query optimization.

**Unit-V:****15hours**

**SQL and SQL\*PLUS:** Getting Text Information and changing it-Searching for Regular Expressions-Playing the Numbers-Dates: Then, Now, and the Difference-Grouping Things Together-Changing Data: insert, update, merge, and delete-Creating and Managing Tables, Views, Indexes, Clusters, and Sequences-PL/SQL: An Introduction to PL/SQL-Triggers-Procedures, Functions, and Packages

**Text books:**

1. Abraham Silberschatz, Henry Korth, S.Sudarshan, 2013, Database System Concepts, 6<sup>th</sup> edition, McGraw Hill Education Private Limited, New Delhi.
2. Bob Bryla, Kevin Loney, 2014, Oracle Database 12c: The Complete Reference, McGraw Hill Education Private Limited, New York  
(<https://www.amazon.com/Oracle-Database-12c-Complete-Reference-ebook/dp/BOODQSTPUE>).

| Unit | Chapters/ Section                                  |
|------|--|
| I    | Book 1: 1(1.1-1.9,1.12,1.13),2(2.1-2.6), 6(6.1), 7 |
| II   | Book 1: 8(8.1-8.6), 10                             |
| III  | Book 1: 14(14.1-14.6), 16(16.1-16.6)               |
| IV   | Book 1: 17(17.1-17.4),18(18.1-18.7)                |
| V    | Book 2: 7,8,9,10,12, 15, 17,32,34,35               |

**Reference Books:**

1. Ramez Elmasri, Shamkant B. Navathe, 2013, Database Systems Models, Languages, Design and Application Programming, 6<sup>th</sup> edition, Pearson Education.
2. Date C.J, Kannan.A, Swamynathan.S, 2013, Introduction to Database Systems, 8<sup>th</sup> edition, , Pearson Education.
3. Rajesh Narang, 2011, Database Management System, 2<sup>nd</sup> edition, PHI Learning Private Limited, New Delhi

**Course Designers**

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2. Mr. P. Muthumariappan

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|                           |                  |                    |     |
|---------------------------|------------------|--------------------|-----|
| <b>Course</b>             | Core 6           | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA           | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III              | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM32            | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Java Programming | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Understand the basic concepts of java.
2. Analyze java application and applet programs.
3. Create mini projects by using java concepts.

**Unit-I: 12hours**

**The Genesis of Java:** Java's Lineage- The creation of java- Why Java is important to internet-Java's Magic: The Byte code-The Java buzzwords. Data types, Variables and Arrays. Operators. Control statements-Introducing classes: Class Fundamentals-Declaring objects-Assigning object reference variables-Introducing Methods-.Constructors-The this Keyword-Garbage Collection-finalize( ) Method.

**Unit-II: 16hour**

**Inheritance:** Inheritance Basics- Using super-Creating a multilevel Hierarchy-When constructors are called--Method overriding-Dynamic method dispatch-Using Abstract classes-using final with inheritance-The Object class. Packages and Interfaces: Packages-Access protection-Importing packages-interfaces.

**Unit III: 17hours**

**Exception Handling:** Exception Handling Fundamentals- Exception types-Uncaught Exceptions-using try and catch-user – Multiple catch Clauses-Nested try Statements-throw-throws-finally-Java's built in exceptions-Creating your own exception subclasses. Multithreaded Programming: The Java Thread Model-main thread-creating a Thread-Creating multiple threads-Using isAlive( ) and join( )-Thread priorities-synchronization-Interthread communication-Suspending, Resuming and stopping Threads.

**Unit IV: 13hours**

**String handling:** String constructor-Special String operations-character extraction-String comparison-Searching Strings-modifying a String-Date conversion using valueof( )-StringBuffer. Exploring java.lang: Simple type wrappers.Input/Output: Exploring java.io: The Java I/O Classes and Interfaces -File-The Stream classes-The Byte Streams-The Character streams.



**Unit V:****17hours**

**The Applet Class:** Applet Basics-Architecture-An Applet skeleton-Simple Applet display methods- Requesting repainting- Using the status window-The Html applet Tag-passing parameter to applets-getDocumentBase( ) and getCodeBase( ). Using AWT Controls, Layout Managers and Menus: Control Fundamentals-Labels-Using Buttons-Applying CheckBoxes-CheckBoxGroup-Choice controls-Using Lists-Managing Scrollbars- Using a TextField- Using a TextArea-UnderStanding Layout Managers-Menu Bars and Menus.

**Text Book:**

[Herbert schildt](#), 2014, Java 2: The Complete Reference 5th edition, Tata McGraw Hill Education Private Limited.

| <b>UNIT</b> | <b>Chapter /Sections</b>           |
|-------------|------------------------------------|
| I           | 1,3,4,5,6                          |
| II          | 8,9                                |
| III         | 10,11                              |
| IV          | 13,14(Pg. 379-401),17(Pg. 537-572) |
| V           | 19(Pg. 627-648),22(Pg. 735-775)    |

**Reference Books:**

1. Adan Dodson, 2016, Java: Java programming for Beginners Teaching You Basic to Advance Java Programming Skills, Createspace Independent Publishing Platform.
2. **Balagurusamy, 2014, programming with Java, 5<sup>th</sup> edition, Tata McGraw Hill Education Private Limited.**
3. Yashwant Kanetkar, 2012, Let Us Java 2<sup>nd</sup> edition, BPB publications.

**Course Designers**

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|                           |            |                    |     |
|---------------------------|------------|--------------------|-----|
| <b>Course</b>             | Core Lab 5 | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | II Year    | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | III        | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML31     | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | RDBMS Lab  | <b>Credits</b>     | 2   |

**SQL:**

1. Queries on Student table
2. Queries on Employee table
3. Queries on Hospital table
4. Queries on Sports table
5. Queries on Export table
6. Join Queries
7. Sub queries

**PL/SQL:**

1. PL/SQL block to find factorial of a given number
2. PL/SQL block to generate Fibonacci series
3. PL / SQL block using Cursors
4. PL / SQL block using Exception handling
5. PL / SQL block using Triggers
6. PL / SQL block using Packages
7. PL / SQL block using Function
8. PL / SQL block using Procedures

**Course Designers**

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|                           |                      |                    |     |
|---------------------------|----------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 6           | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | II Year              | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | III                  | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML32               | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Java Programming Lab | <b>Credits</b>     | 2   |

### Simple Programs

- Write a Java program to print the result of the following operations:
  - $-5a + 8 * 6$
  - $b(55+9) \% 9$
  - $20 + (-3*5 / 8)x$
  - $5 x + (15 / 3 * 2 )y - 8 \% 3$
- Write a Java program to print the sum (addition), multiply, subtract, divide and remainder of two numbers.
- Write a Java program to print the area and perimeter of a rectangle.
- Write a Java program that reads a number in inches, converts it to meters.
- Write a Java program that keeps a number from the user and generates an integer between 1 and 7 and displays the name of the weekday.
- Write a Java program that reads a number and display the square, cube, and fourth power

### Control Structures

- Write a program in Java to make such a pattern like right angle triangle with a number which will repeat a number in a row.
- Write a program in Java to make such a pattern like right angle triangle with number increased by 1.
- Write a program in Java to print the Floyd's Triangle
- Write a program in Java to print the Floyd's Triangle

1

01

101

0101

10101

## **Array**

1. Write a Java program to calculate the average value of array elements.
2. Write a Java program to test if an array contains a specific value
3. Write a Java program to find the index of an array element.
4. Write a Java program to remove a specific element from an array.
5. Write a Java program to copy an array by iterating the array
6. Write a Java program to insert an element (specific position) into an array.
7. Write a Java program to find the maximum and minimum value of an array. Write a Java program to reverse an array of integer values.

## **String**

1. Write a Java program to implement java String functions
2. Write a Java program to implement java String Buffer functions

## **Oops**

1. Write a java program for simple banking system.
2. Write a java program for library management system.
3. Write a java program for inventory management using Array of objects.
4. Write a java program for Inheritance.
5. Write a java program for Function Overloading process.
6. Write a java program for User-Defined Package.
7. Write a java Multi-Threaded Program.

## **Applet**

1. Write a java program for the demo of Applet Life Cycle
2. Write a java Applet Program for Graphic Images
3. Write a java program for Changing Layout of Applet

## **Course Designers**

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|---------------------------|----------------------|--------------------|-----|
| <b>Course</b>             | Core 7               | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II Year              | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | IV                   | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM41                | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Software Engineering | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Familiar with software engineering techniques, procedures & tools.
2. Aware of current trends and technologies in software engineering.
3. Create software projects by applying software engineering concepts.

**Unit -1: 17hours**

**Introduction to Software Engineering:** Introduction –Some definitions –Some size factors– Quality and productivity factors – Managerial issues. Planning a Software Project: Introduction –Defining the problem– Developing a solution strategy – Planning the development process– Planning an organizational structure–Other planning activities.

**Unit -II: 13hours**

**Software Cost Estimation:** Introduction – Software cost factors– Software cost estimation Techniques– Staffing level estimation –Estimating software maintenance costs.

**Unit -III: 13hours**

**Software Requirements Definition:** Introduction – The Software requirements specification – Formal specification techniques– Relational notations – State oriented notation –Languages and processors for requirements specification– PSL / PSA – RSL / REVS – Structured analysis and design technique (SADT) – Structured system analysis (SSA) – GIST.

**Unit -IV: 14hours**

**Software Design:** Introduction – Fundamental design concepts– Modules and modularizing criteria – Design notations– Design techniques – Detailed design consideration – Real -Time and Distributed system design – Test plans – Milestones, Walkthroughs, and Inspections – Design guidelines.

**Unit -V:****18hours**

**Software Testing Strategies:** A Strategic approach to software testing– Strategic issues–Testing strategies for conventional software– Validation testing – System testing. Testing Conventional Applications: Software testing fundamentals –Internal and External views of testing –White-box testing– Basis path testing – Control structure testing – Black-box testing. Software Configuration Management: Software configuration management – The SCM repository – The SCM process.

**Text Books:**

- 1.Richard.E.Fairely, 2014 Reprint, Software Engineering Concepts, Tata McGraw – Hill Education Private Limited, New Delhi.
- 2.Roger S.Pressman, 2015, Software Engineering A Practitioner’s Approach, 7<sup>th</sup> edition, Tata McGraw – Hill Education Private Limited, New Delhi.

| Unit | Chapters/Sections  |
|------|--|
| I    | Book1: 1(1.1-1.4), 2(2.1-2.5)                                |
| II   | Book1: 3(3.1-3.4)  |
| III  | Book1: 4(4.1-4.3)  |
| IV   | Book1: 5(5.1-5.9)  |
| V    | Book2: 17(17.1-17.3,17.6,17.7), 18(18.1-18.6), 22(22.1-22.3) |

**Reference Books:**

1. Ian Sommerville, 2015, Software Engineering, 9<sup>th</sup> edition, Pearson Indian Education Service Private Limited, Chennai.
2. Pankaj Jalote 2015, An Integrated Approach to Software Engineering, 3<sup>rd</sup> edition, Narosa Publishing House, New Delhi.
- 3.Aggarwal k.k,Yogeshsingh,2005, Software Engineering, 2<sup>nd</sup> edition, New age international Private Limited, Publishers,New Delhi.
- 4.[https://www.tutorialspoint.com/software\\_engineering/software\\_engineering\\_quick\\_guide.htm](https://www.tutorialspoint.com/software_engineering/software_engineering_quick_guide.htm)

**Course Designers**

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2. Mrs. R. Umamaheswari

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|                           |                 |                    |     |
|---------------------------|-----------------|--------------------|-----|
| <b>Course</b>             | Core 8          | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II Year         | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | IV              | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM42           | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Data Structures | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

- 1. Understand linear and non-linear data structures**
- 2. Apply the appropriate data structures in various problems and projects**

**Unit – I : Introduction**

**15 hours**

Definitions – Concept of Data Structures – Overview of Data Structures –Implementation of Data Structures. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays. Linked Lists: Definition – Single Linked List –Circular Linked List – Double Linked List – Circular Double Linked List.

**Unit – II : Stacks**

**15 hours**

Introduction – Definition – Representation of a Stack – Operations on Stacks. Queues: Introduction - Definition – Representation of Queues – Various Queue Structures.

**Unit – III : Trees**

**15 hours**

Trees: Basic Terminologies-Definition and Concepts- Representation of Binary Trees – Operations on a Binary a Binary Tree-Insertion-Deletion-Traversal-Merging together Two Binary Trees. Types of Binary Trees-Binary Search Tree.

**Unit – IV : Graphs**

**15 hours**

Introduction – Graph Terminologies – Representation of Graphs-Set Representation- Linked Representation – Matrix Representation – Operations on Graphs.

**Unit – V : Sorting**

**15 hours**

Preliminaries-Insertion Sort -Shell Sort – Heap Sort – Merge Sort – Quick Sort- Sorting Large Structures – Bucket Sort.

**Text Books:**

1. Samanta.D , 2016, “Classic Data Structures”, Prentice-Hall India Pvt Ltd.
2. Mark Allen Weiss, 2014 Seventeenth Impression, “Data Structures and Algorithm Analysis in C“, Pearson Education, Second Edition.

| <b>UNIT</b> | <b>Chapter /Sections</b>                           |
|-------------|--|
| I           | Book 1: 1,2, 3(3.1 to 3.5)                         |
| II          | Book 1: 4(4.1 to 4.4),5 (5.1 to 5.4)               |
| III         | Book 1: 7 (7.1 to 7.4), 7.5 (7.5.2)                |
| IV          | Book 1: 8 (8.1 to 8.4)                             |
| V           | Book 2: 7(7.1, 7.2, 7.4, 7.5, 7.6 ,7.7, 7.8, 7.10) |

### **Reference Books:**

1. Well Dale, Jones, 2015, C++ Plus Data structures, 6<sup>th</sup> edition, Bartlett.
2. Varsha H.Patil, 2012, Data Structures using c++ , Oxford University Press.

### **Course Designers**

1. Dr. S.Abirami
2. Mrs. R.Umamaheshwari



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|                           |                             |                    |     |
|---------------------------|-----------------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 7                  | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | II Year                     | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | IV                          | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML41                      | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Data Structures Lab using C | <b>Credits</b>     | 2   |

### **Data Structures**

#### **Linear**

1. Write a C program to implement operations of Stack.
2. Write a C program for implementing Queue operations.
3. Write a C program for Linked List creation, traversal, deletion of a node, insertion of node, sorting.
4. Write a C program for various operations on Circular Linked Lists
5. Write a C program for various operations on Doubly Linked Lists

#### **Non-Linear**

1. Write a C program to represent a graph using Array.
2. Write a C program to implement a graph using linked List.
3. Write a C program for graph searching operation.
4. Write a C program to implement binary tree.
5. Write a C program to implement operations on binary tree.

#### **Sorting**

1. Write a C program to implement quick sorting algorithm.
2. Write a C program to implement insertion sorting process.

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|                           |                               |                    |     |
|---------------------------|-------------------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 8                    | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | II BCA                        | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | IV                            | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML42                        | <b>Hours/ Week</b> | 4   |
| <b>Title of the Paper</b> | Web Designing With PHP<br>Lab | <b>Credits</b>     | 2   |

### HTML

1. To Create List tag in HTML
2. To Create Table tag in HTML
3. To Create Form tag in HTML
4. To Create Frame set in HTML

### CSS

1. To implement Inline CSS
2. To implement Internal CSS
3. To implement External CSS
4. Implementation of css in web page

### JAVA SCRIPT

1. Write a Java Script program for Control structure
2. Write a Java Script program for Looping structure
3. Write a Java Script program for Form validate
4. Write a Java Script program for Prompt box
5. Write a Java Script program for Alert box
6. Write a Java Script program for Using animation

### XML

1. Write a XML to design the different document
2. Write a XML program for Schema structure
3. DTD to validate the XML document

### PHP

1. Write a program for Basic structure of PHP
2. Write a PHP program for Conditional statement
3. Write a PHP program for Looping statement
4. Write a PHP program for Creating simple application
5. Write a PHP program for Database connectivity
6. Write a PHP program for Create website for our college
7. Write a PHP program for Array functions
8. Write a PHP program for Usage of session in PHP

### Course Designers

1. Mr. P. Muthumariappan
2. Dr.V.T.Meenatchi

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|                           |                       |                    |     |
|---------------------------|-----------------------|--------------------|-----|
| <b>Course</b>             | Allied 4              | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II Year               | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | IV                    | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SAM41                 | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Quantitative Aptitude | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Solve various quantitative and aptitude problems.
2. Clear competitive examinations with high score.
3. Improve their verbal and non verbal ability.

**Unit I:**

**15 hours**

Numbers, HCF & LCM of Numbers, Decimal Fractions, Simplification, Problems on Ages

**Unit II:**

**15 hours**

Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance.

**Unit III:**

**15 hours**

Pipes & Cistern, Allegation or Mixture, Problems on Trains, Probability

**Unit IV:**

**15 hours**

Simple Interest , Compound Interest, Calendar, Odd man out & Series, Permutations & Combinations.

**Unit V:**

**15 hours**

Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs, Partnership, Chain Rule

**Text Books:**

Agararwal R.S, 2016, Quantitative Aptitude For Competitive Examinations (Fully solved) As Per New Examination Pattern 7<sup>th</sup> Revised edition, S. Chand & Company Pvt Ltd, New Delhi.

| <b>Unit</b> | <b>Chapters/ Section</b> |
|-------------|--------------------------|
| I           | 1, 2, 3, 4, 8            |
| II          | 10, 11, 12, 15, 17       |
| III         | 16, 18, 20, 31           |
| IV          | 21, 22, 27, 30,35,       |
| V           | 36, 37, 38, 39,13,14     |

### **Reference Books:**

1. Abhijit Guha, 2014, Quantitative Aptitude for Competitive Examinations, 5<sup>th</sup> edition, Tata McGraw – Hill Publications, New Delhi.
2. **Sijwali BS, Indu Sijwali, 2014, A New Approach to Reasoning Verbal & Non-Verbal Paperback , Arihant Publication**
3. [www.careerbless.com](http://www.careerbless.com)

### **Course Designers**

1. Mrs. R.Umamaheswari
2. Mr. P. Muthumariyappan

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|                           |                                |                    |     |
|---------------------------|--------------------------------|--------------------|-----|
| <b>Course</b>             | Core 9                         | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III Year                       | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | V                              | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM51                          | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Data Communication and Network | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the components of data communication and OSI model.
2. Know about various protocols in TCP/IP suite.
3. Understand Transmission media and mode.

**Unit-I:**

**12 hours**

**Introduction:** Data Communications - Components – Data Representation – Data Flow- Networks – Network Types – Internet History. Network Models: Protocol Layering – TCP/IP Protocol Suite – The OSI Model

**Unit-II:**

**16 hours**

**Physical Layer:** Data and Signals – Periodic Analog Signals – Digital Signals - Transmission Impairment – Data Rate Limits – Performance. Transmission Media: Introduction - Guided Media – Unguided Media:Wireless. Switching: Introduction – Circuit Switched Networks – Packet Switching .

**Unit-III:**

**15 hours**

**Data Link Layer:** Introduction – Link layer Addressing. Error Detection and Correction: Introduction – Block Coding – Cyclic Codes – Checksum. Data Link Control(DLC): DLC Services – Data Link Layer protocols – HDLC – Point to Point protocol(PPP). Media Access Control(MAC): Random Access.

**Unit-IV:**

**17 hours**

**Network Layer:** Network Layer Services – Network Layer Performance – IPV4 Addresses. Network Layer Protocols: Internet Protocol(IP) – ICMPv4 – MobileIP. Unicast Routing: Introduction – Routing Algorithms- Unicasting Routing protocols. Transport Layer: Introduction – Transport Layer Protocols.

**Application Layer:** Introduction. Standard Client Server protocols: World Wide Web and HTTP – FTP – Electronic Mail – TELNET – Secure Shell (SSH) – Domain Name System (DNS). Cryptography and Network Security: Introduction. Internet Security: Network Layer Security – Transport Layer Security – Application Layer Security – Firewalls.

**Text Book:**

Behrouz A. Forouzan, 2013, Data Communications and Networking , 5<sup>th</sup> edition, McGraw – Hill Education Private Limited, New Delhi

| Unit | Chapters/ Section  |
|------|--|
| I    | 1(1.1-1.4), 2(2.1-2.3)   |
| II   | 3(3.1-3.6), 7(7.1-7.3), 8(8.1-8.3)                             |
| III  | 9(9.1-9.2), 10(10.1-10.4), 11(11.1-11.4), 12(12.1)             |
| IV   | 18(18.1,18.3,18.4), 19(19.1-19.3),20(20.1-20.3), 23(23.1,23.2) |
| V    | 25(25.1), 26(26.1-26.6),31(31.1), 32(32.1-32.4)                |

**Reference Books:**

1. Achyut S Godbole, Atul Kahate, 2014(6<sup>th</sup> Reprint), Data Communications and Networks , McGraw – Hill Education Private Limited, New Delhi
2. Tannenbaum, 2011, Computer Networks, 5<sup>th</sup> edition, Pearson Education Inc., USA
3. Sarma C.R, 2006, Computer Networks, A Pragmatic Approach. Jaico Publishing house, NewDelhi
4. <http://www.studytonight.com/computer-networks/complete-osi-model>

**Course Designers**

1. Dr. V. T. Meenatchi
2. Mr. P. Muthumariappan

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|                           |                   |                    |     |
|---------------------------|-------------------|--------------------|-----|
| <b>Course</b>             | Core 10           | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III Year          | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | V                 | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM52             | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | . Net Programming | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Recognize the concepts of .Net Technology.
2. Develop cross platform web applications.
3. Create multi language windows application.

**Unit –I: 13hours**

**Introduction to .Net:** .Net Defined-The .Net Framework-VB .Net-Hello World: Creating a windows Forms application- Creating a Web Forms application. Data types, variables and operators: Data Types-and variables-Type Conversion-Structures-Numeric Parsing-System.String Class-Operators. Arrays: Introducing Arrays-Multi dimensional Arrays-Dynamic Arrays-The Array Class Members. Conditional Logic: The if then else Statement-The select case Statement-do..loop Statement-While..end while Statement-For...next Statement-For each...next Statement-A Complete example. Procedures: Procedures Overview-types of procedures-built in functions.

**Unit –II: 15hours**

**Dialog Boxes:** Introduction to dialog boxes-The Message box class-common dialog class. Error Handling: Errors in Programming-Structured Exception Handling-On Error Statement-Classes and Objects: Introduction to classes-Creating class-Class Block-Inside-classes-Overloading-overriding-Constructors-Destructors.

**Unit-III: 16hours**

**Controls:** Delegates-System. windows. forms. control-Properties-Methods. Specific controls: Base Controls-Derived controls-Display controls-Miscellaneous controls.

**Unit-IV: 15hours**

**ADO .NET:** Accessing ADO.NET Features and namespaces-Using ADO.NET-Data Access in Visual Studio .NET: Visual studio .Net Database tools-Visual Studio .NET and ADO .NET.

**Unit-V:****16hours**

**Introduction to ASP .NET-** Why Asp .NET? .Html Server controls: XHTML – Compliant Code-Common Tag Attributes-Over view of Html Server Controls-Descriptions of the HTML server Controls and How to Program Them. Web controls: Browser Sniffing- Html Server Controls versus Web Controls-Web Controls and How to Program for them.

**Text Book:**

Bill Eyjen,Jason Beres, 2014, VB . NET Programming Bible,Wiley publication.

| <b>UNIT</b> | <b>Chapter /Sections</b>   |
|-------------|----------------------------|
| I           | 1,4,5,6,7,8                |
| II          | 9,12,14                    |
| III         | 26,27(Pg. 583-640,648-652) |
| IV          | 22,23                      |
| V           | 32,34,35                   |

**Reference Books:**

1.Matthew MacDonald, 2013(Reprint), The Complete Reference ASP.NET,McGraw Hill Education Private Limited,New Delhi.

2.Mary Delamater and Anne Boehm, 2013, Murach’s ASP.NET 4.5 Web Programming with C#.

**3.Jason Beres, 2003, Sams Teach Yourself Visual Studio .NET 2003 in 21 Days.**

**Course Designers**

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2. Mr. P.Muthumariappan



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|                           |                  |                    |     |
|---------------------------|------------------|--------------------|-----|
| <b>Course</b>             | Core 11          | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III Year         | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | V                | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM53            | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Operating System | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the basics of Operating Systems.
2. Describe about how OS manage resources.
3. Provide solutions for deadlock, scheduling, paging and segmentation.

**Unit-I**

**15hours**

**Introduction: Computer-System Organization–Computer-System Architecture–Operating-System Structure– Operating-System Operations. Process Management-Memory Management- Storage Management –Computing Environments. System Structures: Operating–System Services–User and Operating-System Interface–System Calls– Types of System Calls–System Programs–Operating –System Design and Implementation- Operating-System Structure- Operating-System Debugging - Operating-System Generation–System Boot.**

**Unit – II:**

**13hours**

**Process Management: Process Concept- Process Scheduling – Operations on Processes–Inter Process Communication. Process Scheduling: Basic Concepts – Scheduling Criteria – Scheduling Algorithms. Deadlocks: System model – Deadlock Characterization – Methods for handling Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection– Recovery from Deadlock.**

**Unit – III**

**16hours**

**Memory Management: Background – Swapping – Contiguous Memory Allocation–Segmentation – Paging – Structure of the Page Table. Virtual Memory Management: Background – Demand Paging – Page Replacement.**

**Unit – IV****16hours**

File Management: **Overview– File Organization and Access– B-Trees– File Directories– File sharing– Record Blocking – Secondary storage Management– File System Security. Disk Scheduling: Disk Performance Parameters–Disk Scheduling Polices.**

**Unit – V****15hours**

**Distributed Processing, Client-Server and Clusters:** Client-Server Computing–Service Oriented Architecture–Distributed Message Passing–Remote Procedure Calls. Computer Security Threats: Computer Security Concepts– Threats, Attacks, and Assets–Intruders–Malicious Software Overview–Viruses, Worms, and Bots–Root kits. Computer Security Techniques: Authentication–Access Control–Intrusion Detection–Malware Defense

**Text Books:**

1. Abraham Silberschatz, Peter B Galvin, Gerg Gagne, 2016, Operating System Concepts, 9<sup>th</sup> edition, Wiley India Pvt . Ltd., New Delhi.
2. William Stallings, 2016, Operating Systems Internals and Design principles, 7<sup>th</sup> edition, Pearson Education Inc, Noida.

| <b>Unit</b> | <b>Chapters/ Section</b>  |
|-------------|---|
| I           | Book 1: 1(1.2-1.8,1.11),2   |
| II          | Book 1: 3(3.1-3.4),5(5.1-5.3), 7                                    |
| III         | Book 1: 8(8.1-8.6), 9(9.1,9.2,9.4)                                  |
| IV          | Book 2: 10(Pg. no. 455-462) ,11(Pg.no.491-523)                      |
| V           | Book2: 13(Pg. no. 577-604),14(Pg. no. 609-632) ,15(Pg. no. 649-670) |

**Reference Books:**

1. **Stuart E.Madnick.John J.Donovan, 2016(Reprint), Operating Systems , Tata McGraw Hill Education, New Delhi.**
2. **Andrew S. Tanenbaum, 2015, Modern Operating Systems , 4<sup>th</sup>edition, Pearson Education.**
3. **Charles Crowlay, 2008, Operating System, A Design-Oriented Approach, Tata McGraw Hill Education, New Delhi**
4. **[https://www.tutorialspoint.com/operating\\_system/os\\_process\\_scheduling.htm](https://www.tutorialspoint.com/operating_system/os_process_scheduling.htm)**

**Course Designers**

1. Mrs. R.Umamaheswari
2. Dr. V.T. Meenatchi

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|                           |                       |                    |     |
|---------------------------|-----------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 9            | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | III Year              | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | V                     | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML51                | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | . Net Programming Lab | <b>Credits</b>     | 2   |

Console Applications:

1. Write a VB .Net program for calculating power values.
2. Write a VB .Net program for the list of factorial values.
3. Write a VB .Net program for an equation.
4. Write a VB .Net program for any one sorting algorithm
5. Write a VB .Net program for the sum of square of two digit numbers in an array.
6. Write a VB .Net program for procedures.
7. Write a VB .Net program for user defined functions.
8. Write a VB .Net program for Exception Handling.
9. Write a VB .Net program for student information management system using class.

Window Based Applications:

1. Write a VB .Net program for dialog boxes.
2. Write a VB .Net program for the demo of ComboBox, RadioButton.
3. Write a VB .Net program for Miscellaneous control.
4. Write a VB .Net program for simple GUI based game.
5. Write a VB .Net program for database manipulation (Insertion, selection) using ADO .Net.
6. Write a VB .Net program for college bus maintenance system using ADO .Net.
7. Write a VB .Net program for login page creation using Asp.Net.
8. Write a VB .Net program for a dynamic webpage creation using Asp.Net, VB.NET

**Course Designers**

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|                           |             |                    |     |
|---------------------------|-------------|--------------------|-----|
| <b>Course</b>             | Core 12     | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III BCA     | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | VI          | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM61       | <b>Hours/ Week</b> | 6   |
| <b>Title of the Paper</b> | Data Mining | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand various Data mining tasks and techniques.
2. Reveal the principles of data retrieval from large databases through data mining.
3. To acquire knowledge in different mining principles.

**Unit I:**

**18 hours**

**Introduction** : Basic Data Mining Tasks: Classification – Regression – Time Series Analysis – Prediction – Clustering – Summarization – Association Rules – Sequence Discovery – Data Mining Vs Knowledge Discovery in Databases – Data Mining Issues – Data Mining Metrics. Related Concepts: Database / OLTP Systems – Fuzzy Sets and Fuzzy Logic – Information Retrieval – Decision Support Systems –Dimensional Modeling- Data Warehousing – OLAP

**Unit II:**

**18 hours**

**Data Mining Techniques** :Introduction – A Statistical perspective on Data Mining – Similarity Measures – Decision Trees – Neural Networks – GeNetic Algorithms. Classification: Introduction – Statistical Based Algorithms – Distance Based Algorithms – Decision Tree Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms

**Unit III:**

**18 hours**

**Clustering**: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms – Partitional Algorithms. Association Rules: Introduction – Large Item sets- Basic Algorithms: Apriori Algorithms – Sampling Algorithms – Partitioning

**Unit IV:**

**18 hours**

**Web Mining** : Introduction – Web Content Mining : Crawlers – Harvest System – Virtual Web View – Personalization – Web Structure Mining: Page Rank – Clever – Web Usage Mining: Preprocessing – Data Structures – Pattern Discovery – Pattern Analysis.

Spatial Mining: Introduction – Spatial Data Overview: Spatial Queries – Spatial Data Structures – Thematic Maps – Image Databases- Spatial Data Mining Primitives- Spatial Classification Algorithms: ID3 Extension

**Unit V:**

**18hours**

**Temporal Mining** : Introduction – Modeling Temporal Events – Time Series: Time Series Analysis – Trend Analysis – Transformation – Similarity – Prediction-Pattern Detection: String Matching-Sequences: Apriori All-SPADE-Generalization-Feature Extraction-Temporal Association Rules: Inter-transaction Rules-Episode Rules-Trend Dependencies

**Text Book:**

Margaret H. Dunham, 2013, Data Mining Introductory and Advanced Topics, Pearson Education Private Limited.

| Unit | Chapters/ Section                 |
|------|-----------------------------------|
| I    | 1(1.1-1.4),2(2.1-2.7)             |
| II   | 3(3.1-3.6),4(4.1-4.6)             |
| III  | 5(5.1-5.5),6(6.1-6.3)             |
| IV   | 7(7.1-7.4),8(8.1-8.3, 8.6: 8.6.1) |
| V    | 9(9.1-9.5 , 9.6: 9.6.1-9.6.3)     |

**Reference Books:**

- 1.Alex Berson,Stephen J.Smith, 2016(Reprint), DataWarehousing,DataMining,&OLAP, Tata McGraw Hill Education, New Delhi.
- 2.Jiawei Han, Micheline Kamber, Jian Pei, 2015, Data Mining Concepts and Techniques, 3<sup>rd</sup> edition, Morgan Kaufmann Publishers.
- 3.Arun K Pujari, 2015(Reprint), Data Mining Techniques, University Press(India),Private Limited.

**Course Designers**

1. Dr. V. T. Meenatchi
2. Mr. P. Muthumariappan

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|                           |                                   |                    |     |
|---------------------------|-----------------------------------|--------------------|-----|
| <b>Course</b>             | Core 13                           | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III Year                          | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | VI                                | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM62                             | <b>Hours/ Week</b> | 6   |
| <b>Title of the Paper</b> | Mobile Application<br>Development | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Know the concepts of android.
2. Practice programming in Android.
3. Develop simple Android applications.

**Unit-I**

**18hours**

**Getting an Overview of Android:** Introducing Android – Discussing about Android Applications – The Manifest File – Downloading and Installing Android – Exploring the Development Environment – Developing and Executing the First Android Application.

**Unit-II**

**18hours**

**Using Activities, Fragments and Intents in Android:** Working with Activities – Using Intents – Fragments – Using the Intent Object to Invoke Built-in Application. Working with User Interface Using Views and ViewGroups : Working with View Groups – Working with Views – Binding Data with the Adapter View Class.

**Unit-III**

**18hours**

**Working with User Interface Using Views and View Groups:** Designing the AutoTextView – Implementing Screen Orientation – Designing the Views Programmatically – Handling UI Events – Specialized Fragments – Creating Menus. Handling Pictures and Menus with Views : Working with Image Views – Designing Context Menu for Image View – Using the Analog Clock and DigitalClock Views – Embedding Web Browser in an Activity – Notifying the User.

**Unit-IV****18hours**

**Storing the Data Persistently :** Introducing the Data Storage Options – Using the Internal Storage – Using the External Storage – Using the SQLite Database - Working with Content Providers –

Working with Graphics and Animations : Working with Graphics – Using the Drawable Object – Using the Shape Drawable Object.

**Unit-V****18hours**

**Working with Graphics and Animations:** Working with the Nine Patch Drawable Graphics – Understanding the concept of Hardware Acceleration – Working with Animations. Audio, Video and Camera : Role of Media Play Back – Using Media Player – Recording and Playing Sound.

**Text book:**

Pradeep Kothari, 2016, Android Application Development Black book, dreamTech

| Unit | Chapter /Sections               |
|------|---------------------------------|
| I    | 2                               |
| II   | 3,4 (Pg. 135-172)               |
| III  | 4(Pg. 178-198) , 5              |
| IV   | 6, 9(Pg. 330-340)               |
| V    | 9 (Pg. 343-351),10(Pg. 362-375) |

**Reference Books:**

1. Lauren Darcey, Shane Conder, 2013, Sams Teach Yourself, Android Application Development, 2<sup>nd</sup> edition, Pearson India Education Services Private Limited.
2. [Zigurd Mednieks](#), [Laird Dornin](#), [G. Blake Meike](#), [Masumi Nakamura](#), 2012, Programming Android, 2nd edition, O'Reilly Media
3. Darwin Ian F, 2012, Android Cookbook , O'Reilly Media

**Course Designers:**

1. Dr. S.Abirami
2. Mrs R.Umamaheswari

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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|                           |                    |                    |     |
|---------------------------|--------------------|--------------------|-----|
| <b>Course</b>             | Core 14            | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | III Year           | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | VI                 | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMM63              | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Python Programming | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the various elements of Python
2. Create GUI based python application.

**Unit-I: 15hours**

**The way of the program-** Variables, expressions and statements-Functions-Case study: interface design: Turtle World -Simple repetition- Exercises- Encapsulation – Generalization-Interface design- Refactoring - A development plan - docstring -Conditionals and recursion.

**Unit-II: 15hours**

**Fruitful functions** – Iteration-Strings-Lists: A list is a sequence -Lists are mutable- Traversing a list - List operations –List Methods-List arguments-Dictionaries: Dictionary as a set of counters - Looping and dictionaries-Global Variable.

**Unit-III: 15hours**

**Tuples:** Tuples are immutable - Tuple assignment -Tuples as return values- Variable-length argument tuples -Lists and tuples- Dictionaries and tuples -Comparing tuples - Sequences of sequences. Files: Persistence- Reading and writing -Format operator- Filenames and paths-Catching exceptions – Databases-Pickling –Pipes-Writing modules.

**Unit-IV: 15hours**

**Classes and objects:** User-defined types- Attributes- Rectangles -Instances as return values- Objects are mutable- Copying. Classes and functions: Time -Pure functions – Modifiers- Prototyping versus planning .Classes and methods: Object-oriented features - Printing objects -Another example –Operator Overloading-Interface and Implementation.



**Inheritance:** Card Objects-Class Attribute-Inheritance-Class Diagrams-case Study: GUI-Buttons and Call back-canvas and Widgets-Coordinate Sequences-more Widgets-Binding.

**Text Book:**

Allen Downey, 2012, Think Python, Green Tea Press

| <b>UNIT</b> | <b>Chapter /Sections</b> |
|-------------|--------------------------|
| I           | 1,2,3,4,5                |
| II          | 6,7,8,10                 |
| III         | 12,14                    |
| IV          | 15,16,17                 |
| V           | 18,19                    |

**Reference Books:**

1. Paul Gries, Jennifer Campbell, Jason Montojo, 2014, Practical Programming: An Introduction to Computer Science Using Python, Pragmatic Bookshelf.

2. Gutttag john v , 2014, **Introduction To Computation And Programming Using Python ,PHI**

3. Luke Sneeringer, 2016(Reprint), Professional Python, Beekam Print & Pack Pvt.Ltd, NewDelhi.

**Course Designers**

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2. Dr. V.T Meenatchi

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|                           |                                       |                    |     |
|---------------------------|---------------------------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 10                           | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | III Year                              | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | VI                                    | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML61                                | <b>Hours/ Week</b> | 6   |
| <b>Title of the Paper</b> | Mobile Application<br>Development Lab | <b>Credits</b>     | 3   |

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the green color with white background.
2. Write the code to display the sum of two numbers.
3. Write the code to check which toggle button is ON/OFF.
4. Write the code to display the rate of the selected food item by using check box.
5. Write the code to create and show the Alert Dialog.
6. Write the code to display item on the spinner and perform event handling.
7. Write the code for simple implicit intent that displays a web page.
8. Simple option menu example that contains three menu items.
9. Write the code to display the context menu on press of the listview.
10. Simple option menu example that
11. Create sample application with login module.(Check username and password)
12. On successful login, go to next screen. And on failing login, alert user using Toast. Also pass username to next screen.
13. Create an application that will change color of the screen, based on selected options from the menu

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|                           |                        |                    |     |
|---------------------------|------------------------|--------------------|-----|
| <b>Course</b>             | Core Lab 11            | <b>Int. Marks</b>  | 40  |
| <b>Class</b>              | III Year               | <b>Ext. Marks</b>  | 60  |
| <b>Semester</b>           | VI                     | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMML62                 | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Python Programming Lab | <b>Credits</b>     | 2   |

### Simple Programs

1. Write a Python program which accepts the radius of a circle from the user and compute the area.
2. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them.
3. Write a Python program to display the first and last colors from the following list  
color\_list = ["Red", "Green", "White", "Black"]
4. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.
5. Write a Python program to calculate number of days between two dates.
6. Write a Python program to get the volume of a sphere with radius 6.
7. Write a Python program to test whether a number is within 100 of 1000 or 2000
8. Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum

### Control Structures

1. Create a Python program to print alphabet pattern 'A'.
2. Program for printing list of multiplication tables.

### Files, Exception and Expressions

1. Program to demonstrate exception handling.
2. Program to demonstrate the use of regular expressions.

### Functions

1. Write a Python function that takes a list of words and returns the length of the longest one.
2. Write a Python program to remove the n<sup>th</sup> index character from a nonempty string
3. Write a Python program to change a given string to a new string where the first and last chars have been exchanged.
4. Write a Python program to remove the characters which have odd index values of a given string.
5. Write a Python program to count the occurrences of each word in a given sentence.
6. Write a Python script that takes input from the user and displays that input back in upper and lower cases

## **Files**

1. Write a Python program to read an entire text file.
2. Write a Python program to read first n lines of a file.
3. Write a Python program to append text to a file and display the text
4. Write a Python program to read last n lines of a file.
5. Write a Python program to read a file line by line and store it into a list.
6. Write a Python program to read a file line by line store it into a variable
7. Write a Python program to read a file line by line store it into an array.
8. Write a python program to find the longest words.
9. Write a Python program to count the number of lines in a text file.

## **GUI Application**

1. Program to show draw shapes & GUI controls.
2. Program to change font color & size using radio, Check box
3. Program to receive personal data of a person.

## **Course Designers**

1. Dr. S. Abirami
2. Dr. V.T Meenatchi

# SEC PAPERS

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|                           |                      |                    |    |
|---------------------------|----------------------|--------------------|----|
| <b>Course</b>             | SEC I                | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II/III BCA           | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | IV/VI                | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(A) | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Latex Lab            | <b>Credits</b>     | 2  |

1. Applying Simple Commands in Latex
2. Prepare a model Question paper
3. Create a document with mathematical equations
4. Prepare an Invitation for Welcome party
5. Create a document which includes Tables
6. Prepare a document which contain atleast 2 paragraphs with chart
7. Prepare a document which contain 2 paragraphs with graph

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|                           |                      |                    |    |
|---------------------------|----------------------|--------------------|----|
| <b>Course</b>             | SEC II               | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II/III BCA           | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | IV/VI                | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(B) | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | R Tool Lab           | <b>Credits</b>     | 2  |

**I. Applying Simple Commands in R**

**II. Regression:**

1. How will you perform Logistic Regression
2. How will you perform Linear Regression

**III. Classification:**

1. Build decision tree with C5.0 to classify the dataset
2. Use Naïve Bayes algorithm for classification

**IV. Clustering:**

1. Apply K-Means clustering algorithm to cluster a dataset

**V. Association:**

1. Use Apriori algorithm for association mining

**Course Designers**

1. Dr. V. T. Meenatchi
2. Dr. S. Abirami

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|                           |                         |                    |    |
|---------------------------|-------------------------|--------------------|----|
| <b>Course</b>             | SEC III                 | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II/III BCA              | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | IV/VI                   | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(C)    | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Programming with SCILAB | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand the basic concepts of SCILAB.
2. Plot 2D and 3D graphics output.

**Unit- I:**

**15 hours**

**Introduction to SCILAB**-What is SCILAB?-Down Loading and Installation  
 SCILAB-SCILAB Environment: Command Line- Working Directory- Comments-Variables  
 in Memory-Recording Sessions-The Scilab MenuBar.Scalars and Vectors: Introduction-  
 Initializing Vectors in Scilab. Mathematical Operations on Vectors: Arithmetic, relational,  
 logical- Mathematical Functions.

**Unit- II:**

**15 hours**

Programming in SCILAB: Introduction-Variables and Variable Names-Assignment  
 Statements-Arithmetic, Relational and Logical Operators-Input & output-Function  
 categories-Flow Control Statements-Break and Continue. The concepts of functions-User  
 Defined functions- Graphics Output:2D Plotting- Function versions for Graphics Commands-  
 3D plotting -other Graphic Primitives (Line, Rectangle, Arc, Strings).

**Text Book:**

H. Ramchandran, A.S. Nair, 2011, SCILAB , S.Chand Publishing.

<http://www.amazon.in/Skylab-Free-Software-Matlab-Ramachandran/dp/8121939704>

| <b>UNIT</b> | <b>Chapter /Sections</b>                      |
|-------------|---|
| I           | 1,2,3   |
| II          | 5 (5.1 -5.7 and 5.10 – 5.11)<br>8 (8.1 – 8.5) |

**Reference Books:**

- 1.M.Affouf, 2012, SCILAB by Example , CreateSpace Independent Publishing Platform
- 2.**Vinu V. Das , 2008, Programming in Scilab 4.1 , New Age International Publisher.**
- 3.<https://www.scilab.org/resources/documentation/tutorials>

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|                           |                          |                    |    |
|---------------------------|--------------------------|--------------------|----|
| <b>Course</b>             | SEC IV                   | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II/III BCA               | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | IV/VI                    | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(D)     | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Fundamentals of Big Data | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand the basics of Big Data
2. Know the concept of Big Data Analytics and importance of Data Science
3. Explore Hadoop basics

**Unit I:** **15 hours**

**Types of Digital Data:** Classification of Digital Data. Introduction to Big Data: Characteristics of Data – Evolution of Big Data– Definition of Big Data – Challenges with Big Data – What is Big Data?-Why Big Data?

**Unit II:** **15 hours**

**Big Data Analytics:**What is Big Data Analytics?– Classification of Analytics – Top Challenges Facing Big Data – Why is Big Data Analytics Important? – What Kind of Technologies are we Looking Toward to Help Meet the Challenges Posed by Big Data? - Data Science – Terminologies Used in Big Data Environments. Introduction to Hadoop:Introducing Hadoop - RDBMS versus Hadoop – HDFS(Hadoop Distributed File System).

**Text book:**

Seema Acharya, SubhashiniChellappan, 2015, Big Data and Analytics, 1<sup>st</sup> edition, Wiley India Private Limited, New Delhi.

| <b>Unit</b> | <b>Chapters/ Section</b>                 |
|-------------|--|
| I           | 1(1.1),2(2.1-2.5,2.7)                    |
| II          | 3(3.2,3.5,3.7-3.10,3.12),5(5.1,5.4,5.10) |

**Reference Books:**

- 1.VigneshPrajapati, 2013, Big Data Analytics with R and Hadoop, 1<sup>st</sup> edition, Packet publishing Private Limited, United Kingdom.
2. TomWhite, 2016, Hadoop The Definitive Guide, 4<sup>th</sup> edition, O'Reilly.

**Course Designers**

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|                           |                                 |                    |    |
|---------------------------|---------------------------------|--------------------|----|
| <b>Course</b>             | SEC V                           | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II/III Year                     | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | IV/VI                           | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(E)            | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Data Mining Lab ( WEKA<br>Tool) | <b>Credits</b>     | 2  |

**I. CSV file & ARFF Viewer:**

1. Given an Excel file, how will you create a CSV file and view the file?
2. Given an Excel file, how will you create an ARFF file and view the file through ARFF Viewer?

**II. Explorer:**

1. Use Explorer to perform Pre-process, for Replacing Missing Values
2. Use Explorer to perform Classification using J48 Algorithm
3. Use Explorer to perform Classification using ZeroR Algorithm
4. Use Explorer to perform Classification using Ripper rule Algorithm
5. Use Explorer to perform Clustering using K-Means Algorithm
6. Use Explorer to perform Hierarchical Clustering
7. Use Explorer to perform Clustering using EM Algorithm
8. Use Explorer to perform Association using Apriori Algorithm
9. Use Explorer to perform Attribute Selection using Information Gain measure

**III. Experimenter:**

1. Compare J48, Ripper and ZeroR using Experimenter environment for any 1 dataset
2. Compare J48, Ripper and ZeroR using Experimenter environment for any of the n datasets
3. Use Experimenter to analyse the given dataset for J48 Algorithm using Cross Validation
4. Use Experimenter to analyse the given dataset for J48 Algorithm using TrainTest Split Maker

**IV. Knowledge Flow:**

1. Use Knowledge Flow to perform classification
2. Use Knowledge Flow to perform clustering
3. Use Knowledge Flow to perform Association

**Course Designers**

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|                           |                           |                    |     |
|---------------------------|---------------------------|--------------------|-----|
| <b>Course</b>             | SEC VI                    | <b>Int. Marks</b>  | 15  |
| <b>Class</b>              | II/III Year               | <b>Ext. Marks</b>  | 35  |
| <b>Semester</b>           | IV/VI                     | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMSEC41/SMMSEC61(F)      | <b>Hours/ Week</b> | 2   |
| <b>Title of the Paper</b> | Advanced Java Programming | <b>Credits</b>     | 2   |

**Course Outcomes:**

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

1. Understand the advanced concepts of java.
2. Write their own java networking applications.
3. Create dynamic web applications by using JDBC and Networking concepts.

**Unit –I:**

**15hours**

**Database Access with JDBC:** Overview of JDBC-JDBC Drivers-Connecting to a Database with Driver Manager- Connecting to a Database using JNDI data source- Statement interfaces- Result sets- Using Metadata.

**Unit-II:**

**15hours**

**Networking :** Networking Basics-Java and the Net-InetAddress-TCP/IP Client Sockets, URL-URL Connection, TCP/IP Server Sockets- Datagrams.

**Text Books:**

1. **Herbert schildt, 2014(Reprint), Java 2: The Complete Reference, 5<sup>th</sup> Edition,Tata McGraw Hill Education Private Limited.**
2. **Phillip Hanna, 2013(Reprint), The Complete Reference JSP 2.0, Tata McGraw Hill Education Private Limited.**

| UNIT | Chapter /Sections                      |
|------|--|
| I    | Book 2: 15                             |
| II   | Book 1: 18 (Pg. 587-599 & Pg. 623-624) |

**Reference Books:**

1. Adan Dodson, 2016, Java:Java programming for Beginners Teaching You Basic to Advance Java Programming Skills,Createspace Independent Publishing Platform.
2. Balagurusamy, 2014, programming with Java, 5th edition, Tata McGraw Hill Education Private Limited
3. Yashavant Kanetkar, 2012, Let Us Java,2<sup>nd</sup> edn, BPB publications

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|                           |  |                    |    |
|---------------------------|--|--------------------|----|
| <b>Course</b>             | NME-I  | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | II Year  | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | III  | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMNME31                                       | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | PC Hardware Assembling and<br>Trouble Shooting | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand how PC, CPU, Motherboard, Bus and Input Device Works.
2. Study about Network Connection and Troubleshooting.
3. Install and Configuring Various Type of Network.

**Unit-I:**

**16hours**

**PC Revealed:** A Short History of computers – Mainframes–Minicomputers–Microcomputers –Enter the personal computer–Safeguarding your PC – Identifying the major components of a PC – Identifying the internal components of a PC.CPUs: Function of the CPU –Identifying the right CPU for any motherboard – Installing and upgrading CPUs – Select and install the proper heat sink and Fan assembly. Motherboards and BIOS: Common motherboard features – Types of motherboard – Installing a motherboard – The system BIOS.

**Unit-II:**

**14hours**

**Expansion Bus:** Expansion buses – Internal buses – Installing a plug and play expansion card – External Expansion Buses: and fireWire. Input Devices: Installing a keyboard – Installing and configuring a mouse – Identifying less common input devices – Maintaining and Troubleshooting Input Devices. Networks: How Networks work – Installing and configuring a dial-up Network – Installing and configuring a Local Area Network – Troubleshooting basic Network problems.

**Text Book:**

Mike Meyers, 2015(Reprint), Introduction to PC Hardware and Troubleshooting, Tata McGraw Hill Education (India) Private Limited, New Delhi.

| Unit    | Chapters/Sections |
|---------|-------------------|
| Unit I  | 1,2,4             |
| Unit II | 5,12,15           |

**Reference Books:**

1. Craig Zacker, John Rourke, 2015(Reprint), PC Hardware, The Complete Reference, Tata McGraw Hill.
2. [K. L. Jame](#), 2013, Computer Hardware: Installation, Interfacing, Troubleshooting and Maintenance , PHI Learning Pvt Ltd, Delhi.

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|                           |                          |                    |    |
|---------------------------|--------------------------|--------------------|----|
| <b>Course</b>             | NME-II                   | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | III Year                 | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | V                        | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SMMNME51                 | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Digital Image Processing | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand the basic concepts in Image Processing
2. Apply image processing techniques for an image

**Unit -I:**

**15hours**

**Introduction** : What Is Digital Image Processing?-The Origins of Digital Image Processing - Examples of Fields that Use Digital Image Processing- Fundamental Steps in Digital Image Processing -Components of an Image Processing System .Digital Image Fundamentals: Elements of Visual Perception- Light and the Electro-magnetic Spectrum-Image Sensing and Acquisition- Image Sampling and Quantization.

**Unit-II:**

**15hours**

**Digital Image Fundamentals:** Some Basic Relationships between Pixels- An Introduction to the Mathematical Tools Used in Digital Image Processing. Image Compression: Fundamentals- Some Basic Compression Methods.

**Text Book:**

R.C. Gonzalez, R.E.Woods, 2016, Digital Image processing, 3rd edition, Pearson Education.

| <b>Unit</b> | <b>Chapters/ Section</b>                   |
|-------------|--|
| I           | 1, 2 (2.1-2.4)                             |
| II          | 2 (2.5, 2.6 (2.6.1 – 2.6.7) ), 8(8.1, 8.2) |

**Reference Books:**

1. Pratt. W.K., 2014, Digital Image Processing, 1<sup>st</sup> edition, John Wiley & Sons.
2. Annadurai, Shanmuga Lakshmi, 2007, Fundamentals of Digital Image Processing, Pearson Education.

**Course Designers**

1. Dr. S. Abirami
2. Dr. V. T. Meenatchi

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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**DEPARTMENT OF COMPUTER APPLICATION &**  
**INFORMATION TECHNOLOGY**  
**(For those who join in 2017 and after)**

|                           |                    |                    |     |
|---------------------------|--------------------|--------------------|-----|
| <b>Course</b>             | Core Elective I    | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA             | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV             | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(A) | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Cloud Computing    | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Study the basics of cloud computing.
2. Analyze the applications of cloud tool.
3. Provide solutions for cloud security and storage.

**Unit –I: 14hours**

**Introduction to Cloud Computing:** Cloud computing in a nutshell– Roots of Cloud computing – Layers and Types of Clouds–Desired features of a cloud –Cloud infrastructure management– Infrastructure as a service providers – Platform as a service providers – Challenges and risks. Migrating into a Cloud: Introduction –Broad approaches to migrating into the cloud – The Seven -step model of migration into a cloud.

**Unit-II: 16hours**

**Virtual Machines Provisioning and Migration Services:** Introduction and Inspirations – Background and related work – Virtual machines provisioning and manageability – Virtual machines migration services – VM provisioning and migration in action – Provisioning in the cloud context. On the Management of Virtual Machines for Cloud Infrastructure: The anatomy of cloud infrastructures – Distributed management of virtual infrastructures – Scheduling techniques for advanced reservation of capacity – Capacity management to meet SLA commitments.

**Unit–III: 15hours**

**Secure Distributed Data Storage in Cloud Computing:** Introduction – Cloud Storage: from LANs to WANs – Technologies for data security in cloud computing. Aneka-Integration of Private and Public Clouds: Introduction– Technologies and tools for cloud computing – Aneka cloud platform - Aneka resource provisioning services – Hybrid cloud implementation.

**Unit-IV: 16hours**

**Work Flow Engine for Clouds:** Introduction – Background – Workflow management system and clouds – Architecture of workflow management systems – Utilizing cloud for workflow execution. Understanding Scientific Applications for Cloud Environments: Introduction – A classification of scientific application and services in cloud – SAGA based scientific applications that utilize clouds.

**Unit –V:****14hours**

**Data Security in the Cloud:** An Introduction to the Idea of data security – The current state of data security in the cloud – Homo sapiens and Digital information – Cloud computing and Data security risk – Cloud computing and Identity – The Cloud, Digital identity, and Data security – Content level security – Pros and Cons .

**Text Book:**

Rajkumar Buyya, James Broberg and Andrzej M.goscinski, 2011, Cloud Computing: Principles and Paradigms, John Wiley & Sons, Inc, Hoboken, NewJersey.

| Unit     | Chapters/Sections           |
|----------|-----------------------------|
| Unit I   | 1(1.1-1.8),2(2.1-2.3)       |
| Unit II  | 5(5.1-5.6),6(6.1-6.4)       |
| Unit III | 8(8.1-8.3),9(9.1-9.5)       |
| Unit IV  | 12(12.1-12.5),13(13.1-13.3) |
| Unit V   | 23(23.1-23.7)               |

**Reference Books:**

1. Rajkumar Buyya, Christian Vecchiola, S.ThamaraiSelvi, 2016(6th Reprint), Mastering Cloud Computing, Tata McGraw Hill Education, New Delhi.
2. Michael Miller, 2008, Cloud Computing: Web -Based Applications That change the way You Work and Collaborate Online, 1<sup>st</sup> edition, Pearson Education.
3. Richard Rodger,2012 Reprint, Beginning Mobile Application Development in the cloud,Wiley India Private Ltd,NewDelhi.
4. <http://searchcloudcomputing.techtarget.com/definition/cloud-computing>

**Course Designers**

1. Mr. P. Muthumariappan
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|                           |                        |                    |     |
|---------------------------|------------------------|--------------------|-----|
| <b>Course</b>             | Core Elective II       | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA                 | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV                 | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(B)     | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Web Designing With PHP | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Create inline, internal & external style sheets.
2. Understand the value of typography in web page design.
3. Build style sheets to maintain continuity across your web site.

**Unit-I: 16hours**

**HTML and JavaScript Programming:** HTML –Introducing HTML document structure – Creating headings on a webpage–Working with links–Creating a paragraph – Working with images–Working with tables–Working with frames–Introduction to forms & HTML controls – Introducing-CascadingStyleSheets–Inlinestyles–Externalstylesheets–Internalstyles–Styleclasses–Multiplestyles–Introducing DHTML–Introducing JavaScript– Client side benefits of using JavaScript over VBScript– Embedding JavaScript in an HTML page– Handling events– Using variables in JavaScript–Using array in JavaScript–Creating objects in JavaScript–Using Operators–Working With control flow statements–Working with functions.

**Unit-II: 15hours**

**Introducing PHP:** Versions of PHP– Features of PHP– Introduction to HTML and XHTML– Advantages of PHP over other scripting languages– Creating a PHP script– Running a PHP script–Handling errors in a PHP script– Escape characters. Working With Variables and Constants: Using variables–Using constants– Exploring Data types in PHP– Exploring operators in PHP.Controlling Program Flow: Conditional statements–Looping statements–Break, Continue and Exit statements.

**Unit -III: 14hours**

**Working With Functions, Arrays, Files and Directories:** Introduction–User Defined Function in PHP – Built-in Functions in PHP– Recursive, Variables, Callback Functions –Introducing arrays–Types of arrays –Traversing arrays using Loops and ArrayIterators –Built in array functions–Working with files and directories– Working with files –Working with directories.



**Unit-IV:****16hours**

**SQL Tutorial:** Relational Databases and SQL– SQL Standards – The Workhorses of SQL –Select – Insert – Update– Delete– Database Design– Privileges and Security. PHP/MySQL Functions – Connecting to MySQL – Making MySQL Queries – Fetching Data Sets – Getting Data about Data– Multiple Connections– Building in Error Checking – Creating MySQL Databases with PHP – MySQL data types – MySQL Functions.

**Unit-V:****14hours**

**Displaying Queries in Tables :** HTML Tables and Database Tables– One-to-one mapping – Example: A single-table displayer– The sample tables – Improving the displayer– Complex Mappings – Multiple queries versus complex printing– A multiple-query example – A complex printing example– Creating the Sample Tables. Building Forms from Queries : HTML Forms– Basic Form Submission to a Database – Self-Submission– Editing Data with an HTML Form.

**Text Books:**

1. Web Technologies Black Book, 2015, Tata McGraw – Dream Tech Press, New Delhi.
2. Tim Converse and JoycePark with ClarkMorgan, 2004, PHP5 and MYSQL Bible,Wiley Publishing Inc,Indiana.

| Unit | Chapters/Sections |
|------|-------------------|
| 6.   | Book1:2           |
| 7.   | Book1:3,4,5       |
| 8.   | Book1:6           |
| 9.   | Book2:13,15       |
| 10.  | Book2:16,17       |

**Reference Books:**

1. Steven Holzner, 2016 (21<sup>st</sup> Reprint), The Complete reference PHP complete reference, Tata McGraw – Hill Education Private Limited, New Delhi.
2. Padma Priya S., 2013 (Reprint), Web Technology, SCITECH Publication Chennai
3. Xavier C., 2012(Reprint), Web Technology and Design, New Age International Private Limited,Publishers,New Delhi.

**Course Designers**

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|                           |                    |                    |     |
|---------------------------|--------------------|--------------------|-----|
| <b>Course</b>             | Core Elective III  | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA             | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV             | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(C) | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Virtual Reality    | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Understand geometric modeling and Virtual environment.
2. Study about Virtual Hardwares and Softwares.
3. Develop Virtual Reality applications.

**Unit -I:**

**15hours**

**Virtual Reality and Virtual Environment:** Introduction – Computer graphics – Real time computer graphics –Flight simulation – Virtually environments –Virtually here– What is required–The benefits of virtual reality. 3D Computer Graphics: Introduction – The virtual world space – Positioning the virtual observer – The perspective projection – Human vision – Stereo perspective projection – 3D clipping – Colour theory – Simple 3D modeling – Illumination models – Reflection models – Shading algorithms- Radiosity – Hiddeny-Surface removal – Realism-Stereographic image.

**Unit –II:**

**15hours**

**Geometric Modeling:** Introduction – From 2D to 3D – 3D Space curves – 3D Boundary representation– Other modeling strategies. Geometrical Transformations: Introduction – Frames of reference – Modeling transformations – Instances –Picking – Flying – Scaling the VE – Collision detection. A Generic VR System: Introduction – The virtual environment – the Computer environment – VR technology – Modes of interaction – VR systems.

**Unit -III :**

**16hours**

**Animating the Virtual Environment:** Introduction – The dynamics of numbers – The animation of objects – Shape and object inbetweening – Free-from deformation – Particle system. Physical Simulation : Introduction – Objects falling in a gravitational field – Rotating wheels – Elastic collisions – Projectiles – Simple pendulums – Springs – Flight dynamics of an aircraft.

**Unit -IV:****16hours**

**Human Factors:** Introduction – The eye – The ear–The somatic senses – Equilibrium. Introduction: Sensor hardware – Head-coupled displays –Acoustic hardware – Integrated VR systems. Virtual Reality Software: Introduction –Modeling virtual worlds – Physical simulation–VR toolkits.

**Unit -V:****13hours**

**Virtual Reality Applications:** Introduction – Engineering – Entertainment – Science – Training. The Future: Introduction – Virtual environments – Modes of interaction.

**Text Book:**

John Vince, 2013(7<sup>th</sup> Impression), Virtual Reality System, Pearsons Education, New Delhi.

| Unit | Chapters/Sections                       |
|------|---|
| I    | 1(1.0-1.7),3(3.0-3.15)                  |
| II   | 4(4.0-4.4),5(5.0-5.7),6(6.0-6.5)        |
| III  | 7(7.0-7.5),8(8.0-8.7)                   |
| IV   | 9(9.0-9.4),10(10.0-10.4), 11(11.0-11.3) |
| V    | 12(12.0-12.4),13(13.0-13.2)             |

**Reference Books:**

1. Tony Parisi, 2015, Learning Virtual Reality, 1st edition, O'Reilly Media,Inc.
2. Grigore C. Burdea, Philippe Coiffet, 2006, Virtual Reality Technology, 2<sup>nd</sup> edition,, Wiley.
3. Alan B.Craig,William R.sherman,Jeffrey D, 2009, Developing Virtual Reality Applications ,1<sup>st</sup> edition ,Morgan Kaufmann Publisher.
4. [www.vrs.org.uk/virtual-reality-applications](http://www.vrs.org.uk/virtual-reality-applications)

**Course Designers**

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|                           |                     |                    |     |
|---------------------------|---------------------|--------------------|-----|
| <b>Course</b>             | Core Elective IV    | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA              | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV              | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(D)  | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Computer Algorithms | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Understand and analyze the concepts of various algorithm
2. Write algorithm for the real life problems

**Unit -I: Basics of Algorithms**

**13hours**

What is an Algorithm-Algorithm specification- Sets and Disjoint Set Union- Introduction- Union and find operations-Graphs-Introduction, Definitions-Graph representations.

**Unit -II: Divide and Conquer**

**16hours**

General Method -Binary search-Finding the maximum and minimum-Merge Sort- Quick sort

**Unit -III: Greedy Method**

**15hours**

General methods-Knapsack problem-Minimum cost spanning trees-optimal storage on tapes- single source shortest paths.

**Unit -IV: Dynamic Programming**

**16hours**

General method-Multi stage graphs-All pair shortest paths -Backtracking-General method-The 8 Queen Problem.

**Unit -V: Sorting Algorithms**

**15hours**

Types - Algorithms and performance measures - Algorithm: insertion - quick sort - merge - shell - Bucket sorting- Heap sorting-bubble Sorting.

**Text Book:**

Ellis Horowitz, Sartaj Sahni, Rajasekaran, 2010, Fundamentals of Computer Algorithm, Galgotia Publication, New Delhi.

| <b>Unit</b> | <b>Chapters/ Section</b>                   |
|-------------|--|
| I           | 1(1.1-1.9,1.12,1.13),2(2.1-2.6), 6(6.1), 7 |
| II          | 8(8.1-8.6), 10                             |
| III         | 14 (14.1-14.6), 16(16.1-16.6)              |
| IV          | 17(17.1-17.4),18(18.1-18.7)                |
| V           | 7,8,9,10,12, 15, 17,32,34,35               |

**Reference Books:**

1. Anany Levinfis, 2015, Introduction to the design & analysis algorithm, Pearson.
2. John Kleinberg, Eva Tardos, 2013, Algorithm Design, 1<sup>st</sup> edition, Pearson.
3. Ellis Horowitz, Sartaj Sahni, Rajasekaran, 2008, Computer Algorithm, Silicon Press.

**Course Designers**

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|                           |                         |                    |     |
|---------------------------|-------------------------|--------------------|-----|
| <b>Course</b>             | Core Elective V         | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA                  | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV                  | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(E)      | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Artificial Intelligence | <b>Credits</b>     | 4   |

**Course Outcomes:**

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

1. Understand the basics of Artificial Intelligence.
2. Know about knowledge representation and Reasoning.
3. Identify learning theory and the natural language of Artificial Intelligence.

**Unit I: 15hours**

**Problems and Search** :What is Artificial Intelligence: The AI problems – The Underlying Assumption – what is an AI Technique – The level of the model – Criteria for Success. Problems, problem Spaces and Search: Defining the problem as a state space search – production systems – problem characteristics– production system characteristics – Issues in the design of search programs . Heuristic Search Techniques: Generate and Test – Hill Climbing – Best-first Search – Problem Reduction – Constraint Satisfaction – Means-ends Analysis.

**Unit II: 15hours**

**Knowledge Representation** : Knowledge Representation Issues: Representation and Mappings – Approaches to Knowledge Representation – Issues in Knowledge Representation – Important Attribute–Relationship among attributes– Choosing the Granularity of representation– Representing Sets of Objects – Finding the Right Structured as Needed– The Frame Problem.

**Unit III: 15hours**

**Using Predicate Logic:** Representing Simple Facts in Logic – Representing Instance and ISA Relationships – Computable functions and Predicates– Resolution –Conversion to clause form –The Basis of Resolutions – Resolution in Propositional logic– The Unification Algorithm – Resolution in Predicate logic –The need to try Several Substitution– Natural Deduction.

**.Unit IV: 15hours**

**Gaming Playing:** Overview – The MiniMax Search Procedure– Adding Alpha-Beta Cutoffs – Additional Refinements – Secondary Search – Using Book Moves –Alternatives to Minimax – Iterative Deepning – References on Specific Games.

**Unit V: 15hours**

**Expert Systems:** Representing and Using Domain Knowledge – Expert System Shells – Explanation – Knowledge Acquisition.

**Text book:**

Elaine Rich, Kevin Knight, Shivashankar B Nair, 2015, Artificial Intelligence, 3<sup>rd</sup> edition, McGraw – Hill Education Private Limited, New Delhi.

| <b>Unit</b> | <b>Chapters/ Section</b>           |
|-------------|------------------------------------|
| I           | 1 (1.1-1.5),2(2.1-2.5),3(3.1- 3.6) |
| II          | 4(4.1- 4.4)                        |
| III         | 5(5.1-5.5)                         |
| IV          | 12(12.1-12.6)                      |
| V           | 20(20.1-20.4)                      |

**Reference Books:**

1. Michael Negnevitsky, 2008, Artificial Intelligence: A Guide to Intelligence, 2<sup>nd</sup> edition, Pearson India Education Services Private Limited.
2. Eugene Charniak, Drew McDermott, 2006, Introduction to Artificial Intelligence, Pearson India Education Services Private Limited.
3. Padhy N.P, 2005, Artificial Intelligence and Intelligent System, Oxford University Press.
4. [www.tutorialspoint.com/artificial\\_intelligence/](http://www.tutorialspoint.com/artificial_intelligence/)

**Course Designers**

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|                           |                    |                    |     |
|---------------------------|--------------------|--------------------|-----|
| <b>Course</b>             | Core Elective V I  | <b>Int. Marks</b>  | 25  |
| <b>Class</b>              | II BCA             | <b>Ext. Marks</b>  | 75  |
| <b>Semester</b>           | III/IV             | <b>Max. Marks</b>  | 100 |
| <b>Sub. Code</b>          | SMMME31/SMMME41(F) | <b>Hours/ Week</b> | 5   |
| <b>Title of the Paper</b> | Logical Reasoning  | <b>Credits</b>     | 5   |

**Course Outcomes:**

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

1. Understand and analyze the various problems in local reasoning.
2. Attend the competitive examinations with confidence.

**Unit I: 15 hours**

**Series:** Series compilation – Number series- Alpha numeric series- Alphabetic series- Patterns -analog – Direct and simple analogs – pair analogies – Alphabet analog.

**Unit II: 15 hours**

**Coding-Decoding :**Letter coding-Direct letter coding – number/symbol coding – Blood relations – Jumbled up descriptions- Relation process.

**Unit III: 15 hours**

**Mathematical Operation :**Mathematical Operation – Problem by substitution Interchanges of sign and Numbers

**Unit IV: 15 hours**

**Logic :**Logic – Statements arguments – Statement assumption.

**Unit V: 15 hours**

**Series :**Series – 5 figure series - 3 and 4 figure series – detecting incorrect order in a series – Arithmetic reasoning.

**Text Book:**

Aggarwal R.S, 2015, A Modern Approach To Verbal & Non Verbal Reasoning , S. Chand & Company Pvt.Ltd, New Delhi.



# **B.Sc., Information Technology (SF)**



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**COURSE STRUCTURE- B.Sc. INFORMATION TECHNOLOGY**  
**Semester – I**

| Course       | Code No. | Subject                                      | Hours     | Credits   | Total No. of Hours Allotted | Max. Marks CA | Max. Marks SE | Total      |
|--------------|----------|--|-----------|-----------|-----------------------------|---------------|---------------|------------|
| Part I       | P111     | Tharkkala Ilakkiyam                          | 5         | 3         | 75                          | 25            | 75            | 100        |
| Part II      | P211     | Communicaive English - I                     | 4         | 3         | 60                          | 25            | 75            | 100        |
| Core 1       | SMI11    | Programming in C                             | 4         | 4         | 60                          | 25            | 75            | 100        |
| Core 2       | SMI11    | Digital Principles and Computer Organization | 4         | 4         | 60                          | 25            | 75            | 100        |
| Core Lab 1   | SMI12    | Programming in C Lab                         | 3         | 2         | 45                          | 40            | 60            | 100        |
| Core Lab 2   | SMIL12   | Digital Design Lab                           | 3         | 2         | 45                          | 40            | 60            | 100        |
| Allied 1     | SAI11    | Discrete Mathematics                         | 5         | 5         | 75                          | 25            | 75            | 100        |
| AECC         | ES       | EVS  | 2         | 2         | 30                          | 15            | 35            | 50         |
| <b>TOTAL</b> |          |  | <b>30</b> | <b>25</b> | <b>450</b>                  | <b>220</b>    | <b>530</b>    | <b>750</b> |

**Semester-II**

| Course     | Code No. | Subject                                  | Hours | Credits | Total No. of Hours Allotted | Max. Marks CA | Max. Marks SE | Total |
|------------|----------|--|-------|---------|-----------------------------|---------------|---------------|-------|
| Part I     | P121     | Tamil                                    | 5     | 3       | 75                          | 25            | 75            | 100   |
| Part II    | P221     | Communicaive English - II                | 4     | 3       | 60                          | 25            | 75            | 100   |
| Core 3     | SMI21    | Object Oriented Programming with C++     | 4     | 4       | 60                          | 25            | 75            | 100   |
| Core 4     | SMI22    | Software Engineering                     | 4     | 4       | 60                          | 25            | 75            | 100   |
| Core Lab 3 | SMIL21   | Object Oriented Programming with C++ Lab | 3     | 2       | 45                          | 40            | 60            | 100   |
| Core Lab 4 | SMIL22   | Structure Program Logic & Design Lab     | 3     | 2       | 45                          | 40            | 60            | 100   |
| Allied 2   | SAI21    | Operations                               | 5     | 5       | 75                          | 25            | 75            | 100   |

|              |              |                                       |           |           |            |            |            |            |
|--------------|--------------|---------------------------------------|-----------|-----------|------------|------------|------------|------------|
|              |              | Research                              |           |           |            |            |            |            |
| AECC         | SMIAE<br>C21 | Effective<br>Communicative<br>English | 2         | 2         | 30         | 15         | 35         | 50         |
| <b>TOTAL</b> |              |                                       | <b>30</b> | <b>25</b> | <b>450</b> | <b>220</b> | <b>530</b> | <b>750</b> |

**Semester – III**

| Course             | Code No. | Subject   | Hours     | Credits   | Total<br>No. of<br>Hours<br>Allotted | Max.<br>Marks<br>CA | Max.<br>Marks<br>SE | Total |
|--------------------|----------|---|-----------|-----------|--------------------------------------|---------------------|---------------------|-------|
| Core 5             | SMI31    | Data Structures                                   | 5         | 4         | 75                                   | 25                  | 75                  | 100   |
| Core 6             | SMI32    | Relational<br>Database<br>Management<br>System    | 5         | 4         | 75                                   | 25                  | 75                  | 100   |
| Core Lab<br>5      | SMIL31   | Data structures<br>using C Lab                    | 4         | 2         | 60                                   | 40                  | 60                  | 100   |
| Core Lab<br>6      | SMIL32   | RDBMS Lab   | 4         | 2         | 60                                   | 40                  | 60                  | 100   |
| NME                | SMINME31 | Hardware<br>Assembling<br>and Trouble<br>Shooting | 2         | 2         | 30                                   | 15                  | 35                  | 50    |
| Core<br>Elective 1 | SMIME31  | Options given                                     | 5         | 5         | 75                                   | 25                  | 75                  | 100   |
| Allied 3           | SAI31    | Numerical<br>Methods                              | 5         | 5         | 75                                   | 25                  | 75                  | 100   |
| <b>TOTAL</b>       |          |   | <b>30</b> | <b>24</b> |                                      |                     |                     |       |

**Semester – IV**

| Course          | Code No. | Subject               | Hours     | Credits   | Total No. of Hours Allotted | Max. Marks CA | Max. Marks SE | Total |
|-----------------|----------|-----------------------|-----------|-----------|-----------------------------|---------------|---------------|-------|
| Core 7          | SMI41    | Operating System      | 5         | 4         | 75                          | 25            | 75            | 100   |
| Core 8          | SMI42    | Java Programming      | 5         | 4         | 75                          | 25            | 75            | 100   |
| Core Lab 7      | SMIL41   | Operating System Lab  | 4         | 2         | 60                          | 40            | 60            | 100   |
| Core Lab 8      | SMIL42   | Java Programming Lab  | 4         | 2         | 60                          | 40            | 60            | 100   |
| Core Elective 2 | SMIME41  | Options given         | 5         | 5         | 75                          | 25            | 75            | 100   |
| SEC             | SMISEC41 | Options given         | 2         | 2         | 30                          | 15            | 35            | 50    |
| Allied 4        | SAI41    | Quantitative Aptitude | 5         | 5         | 75                          | 25            | 75            | 100   |
|                 |          |                       |           |           |                             |               |               |       |
| <b>TOTAL</b>    |          |                       | <b>30</b> | <b>24</b> |                             |               |               |       |

### Semester – V

| Course       | Code No. | Subject                            | Hours     | Credits   | Total No. of Hours Allotted | Max. Marks CA | Max. Marks SE | Total |
|--------------|----------|------------------------------------|-----------|-----------|-----------------------------|---------------|---------------|-------|
| Core 9       | SMI51    | .Net Technology                    | 5         | 5         | 75                          | 25            | 75            | 100   |
| Core 10      | SMI52    | Mobile Application Development     | 5         | 4         | 75                          | 25            | 75            | 100   |
| Core 11      | SMI53    | Computer Networks                  | 5         | 4         | 75                          | 25            | 75            | 100   |
| Core Lab 9   | SMIL51   | Net Technology Lab                 | 6         | 2         | 90                          | 40            | 60            | 100   |
| Core Lab 10  | SMIL52   | Mobile Application Development Lab | 5         | 2         | 75                          | 40            | 60            | 100   |
| NME          | SMINME51 | Basics of Web Development          | 2         | 2         | 30                          | 15            | 35            | 50    |
| VE 1         | VE       | Value Education                    | 2         | 1         | 30                          | 15            | 35            | 50    |
| <b>TOTAL</b> |          |                                    | <b>30</b> | <b>20</b> |                             |               |               |       |

### Semester – VI

| Course                                     | Code No. | Subject                    | Hours     | Credits    | Total No. of Hours Allotted | Max. Marks CA | Max. Marks SE | Total |
|--|----------|----------------------------|-----------|------------|-----------------------------|---------------|---------------|-------|
| Core 12                                    | SMI61    | Web Designing with PHP     | 5         | 5          | 75                          | 25            | 75            | 100   |
| Core 13                                    | SMI62    | Cloud Computing            | 5         | 4          | 75                          | 25            | 75            | 100   |
| Core 14                                    | SMI63    | Data Warehousing & Mining  | 5         | 4          | 75                          | 25            | 75            | 100   |
| Core Lab 11                                | SMIL61   | Web Designing with PHP Lab | 5         | 2          | 75                          | 40            | 60            | 100   |
| Core Lab 12                                | SMIL62   | Networking Lab             | 4         | 2          | 60                          | 40            | 60            | 100   |
| Project                                    | SPJ      | Major Project              | 4         | 2          | 60                          | 25            | 75            | 100   |
| SEC  | SMISEC61 | Options given              | 2         | 2          | 30                          | 15            | 35            | 50    |
| Part V                                     |          | Part V                     |           | 1          |                             |               |               |       |
| <b>TOTAL</b>                               |          |                            | <b>30</b> | <b>22</b>  |                             |               |               |       |
| <b>TOTAL CREDITS FOR SEMESTERS I to VI</b> |          |                            |           | <b>140</b> |                             |               |               |       |

**Discipline – 1**

- 1) Digital Principles and Computer Organization
- 2) Software Engineering
- 3) Data Structures
- 4) Operating System
- 5) Computer Networks
- 6) Mobile Application Development
- 7) Cloud computing
- 8) Data Warehousing & Mining

**Discipline – 2**

- 1) Programming in C
- 2) Object Oriented Programming with C++
- 3) Java Programming
- 4) Relational Database Management System
- 5) .Net Technology
- 6) Web Designing with PHP
- 7) Networking Lab
- 8) Structure Program Logic Design Lab

**Discipline – 3**

- 5) Discrete Mathematics
- 6) Operations Research
- 7) Numerical Methods
- 8) Quantitative Aptitude

**Core Electives**

- 7) Microprocessor and Assembly Language Programming
- 8) Soft Computing
- 9) E - Commerce
- 10) Software Project Management
- 11) Principles of Data Communication
- 12) Computer Forensics

**SEC**

- 9) Robotics
- 10) Desk Top Publishing Lab (Photoshop, Corel Draw, Flash)
- 11) Embedded System
- 12) Python Programming
- 13) Logical Reasoning
- 14) Software Testing Foundation
- 15) Hardware Assembling and Trouble Shooting-NME
- 16) Basics of Web Development - NME

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**(For those who join in 2017 and after)**

|                           |                         |                    |            |
|---------------------------|-------------------------|--------------------|------------|
| <b>Course</b>             | <b>Core 1</b>           | <b>Int. Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>I Year</b>           | <b>Ext. Marks</b>  | <b>75</b>  |
| <b>Semester</b>           | <b>I</b>                | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI11</b>            | <b>Hours/ Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>Programming in C</b> | <b>Credits</b>     | <b>4</b>   |

**Course Outcomes:**

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

1. Understand and apply the basics of programming concepts.
2. Understand the reason why different constructs are available for iteration, such as "for" loops, "do...while" loops.
3. Apply the concepts like array, pointers, structure and files.

**Unit - I:**

**12 hours**

**Overview of C:** History of C-Importance of C –Sample Program - Printing a Message-Sample Program - Adding Two Numbers- Sample Program - Interest Calculation-Sample Program - Use of Subroutines Sample Program - Use of Math functions-Basic structure of C programs-Programming Style. **Constants, Variables and Data Types:** Introduction –Character set-C tokens-Key words and identifiers-Constants-Variables-Data Types-Declaration of variables-Declaration of storage class-Assigning values to variables-Defining symbolic constants-Declaring a variable as constant.**Operators and Expressions:** Arithmetic operators-Relational operators-Logical operators-Assignment operators-Increment and decrement operators- Conditional operator-Bitwise operators-special operators-Arithmetic expressions-Evaluation of expressions-Precedence of arithmetic operators-Type conversions in expressions.**Managing Input and output operations:** Reading a character-Writing a character-formatted input- formatted output.**Decision making and branching:** Introduction-Simple If statement-the If... Else statement –Nesting of If- Else statement –The Else If ladder- The switch statement –The?-operator-The goto statement.

**Unit - II:**

**12 hours**

**Decision making and looping:**Introduction-The while statement –The do statement - The for Statement – Jumps In Loops Array:Introduction – One- Dimensional Arrays – Declaration of One- Dimensional Arrays-Initialization of One –Dimensional Arrays-Two Dimensional Arrays-Initializing Two- dimensional Arrays- Multi- dimensional Arrays-Dynamic Arrays –**Character Arrays and String** :Introduction–Declaring and Initializing String Variables –Reading Strings from Terminal- Writing Strings to Screen – Arithmetic Operations on Characters – Putting Strings Together –Comparison of Two Strings-String - Handling Functions.



**Unit - III:****12 hours**

**User –Defined Functions:** Introduction- Need for User- Defined Functions –A Multi-Function Program-Elements of User- Defined Functions – Definition of Functions-Return Values and Their Types –Function Calls-Function Declaration– Category of Functions –No Arguments and No Return Values-Arguments but No Return Values-Arguments with Return Values-No Arguments but Returns a Value-Functions that Return Multiple values-Nesting of Functions – Recursion- Passing Arrays to Functions – Passing Strings to Functions- The scope, Visibility and Lifetime of Variables.

**Unit – IV:****12 hours**

**Structures and Unions:** Introduction– Defining a Structure–Declaring Structure Variables –Accessing Structure Members-Structure Initialization-Copying and Comparing Structure Variables-Operations on Individual Members-Arrays of Structures- Arrays within Structures-Structures within Structures-Unions-Size of Structures-Bit Fields.

**Unit - V:****12 hours**

**Pointers:** Introduction-Understanding Pointers – Accessing the Address of a Variable- Declaring Pointer Variables- Initialization of Pointer Variables.**File Management in C:**Introduction-Defining and Opening a File-Closing a File-Input/Output Operations on Files-Error Handling During I/O Operations-Random Access to Files.

**Text Books:**

Balagurusamy.E 2017. Programming in C, 7<sup>th</sup> edition, Tata McGraw – Hill Education Private Limited, New Delhi.

| Unit | Chapters/Page number   |
|------|--|
| I    | 1(page-1 to 13.), 2(page22 to 44), 3(page51to 69),4(page 81,82,85,86,94)   |
| II   | 5(page111 to 136),6(page149,151,153,156,166,173)7(page189,191,192,194,200,204,212)<br>8(page234,235,236,242,246,248,249) |
| III  | 9(page267 to298)   |
| IV   | 10 (page320 to 339).   |
| V    | 11(page353 to 358) 12(page391 to 402)  |

**Reference Books:**

- 1.Yashwant Kanetkar, 2016, Let Us C, 14<sup>th</sup> edition, BPB Publications, New Delhi.
- 2.Byron S. Gottfried, 2010. Programming with C, 3<sup>rd</sup> edition, Tata McGraw – Hill Publications, New Delhi.
- 3.Ananthi Sheshasaayee, 2009. Programming Language C with Practical, Margham Publication, Chennai.

**Course designer:**

1. M. Hemalatha
2. S. Kumarappan

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|                           |   |                    |            |
|---------------------------|---|--------------------|------------|
| <b>Course</b>             | <b>Core 2</b>                                       | <b>Int. Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>I Year</b>                                       | <b>Ext. Marks</b>  | <b>75</b>  |
| <b>Semester</b>           | <b>I</b>  | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI12</b>  | <b>Hours/ Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>Digital Principles and Computer Organization</b> |                    | <b>4</b>   |

**Course Outcomes:**

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

1. Demonstrate knowledge of binary number theory and Boolean algebra.
2. Analyze and design combinational systems using standard gates.
3. Design simple combinational and sequential digital functions.
4. Understand the architecture of modern computer.

**Unit I :** **10 hours**

**Combinational Logic Circuits:** Boolean Laws and Theorems-Sums-of-Products Method-Truth table to Karnaugh Map-Pairs,Quads,and Octets-Karnaugh Simplifications-Don't care conditions-Product-of-Sums Method-Product-of-sums Simplification.

**Unit II:** **12 hours**

**Number Systems and Codes:** Binary number system-Radix representation of numbers-Binary –to-decimal conversion- Decimal –to-binary conversion-Octal numbers-Hexadecimal numbers-The ASCII code-The Excess -3 code- The Gray code. **Arithmetic circuits:** Binary addition-Binary subtraction- Unsigned Binary numbers-Sign –magnitude numbers-2's complement representation-2's complement arithmetic-Arithmetic building blocks-The adder-subtractor. **Flip-Flops:** RS Flip Flops-Gated Flip –Flops-Edge –triggered RS Flip Flops.

**Unit III:** **14 hours**

**Basic Structure Of Computers:** Computer Types– Functional Units – Basic Operational Concepts – Bus Structures-Software-Performance – Multiprocessors and Multicomputers -Historical Perspective .**Machine Instructions and Programs:** Instructions and Instruction sequencing –Addressing modes- Basic input/output operations-Stacks and Queues.

**Unit IV:** **13 hours**

**Input/Output organization :** Accessing I/O devices– Interrupts – Direct Memory Access– Buses-Interface circuits.**The Memory System:** Some Basic Concepts – Semiconductor RAM Memories– Read Only Memories– Cache Memories – Virtual memories.

**Unit V :****11 hours**

**Arithmetic:**Addition and subtraction of signed numbers– Multiplication of Positive Numbers– Integer Division– **Pipelining:** Basic concepts – Data Hazards- Instruction Hazards –**Embedded Systems:** Examples of Embedded systems–Processor Chips for Embedded Applications.**Basic Processing Unit:**Some Fundamental Concepts-Execution of a Complete Instruction-Multiple-Bus Organization –Hardwired control.

**Text Books:**

1. Donald P.Leach , Albert Paul Malvino, Goutam Saha, 2014. Digital Principles and Applications, 8<sup>th</sup> edition, Tata McGraw – Hill Publications, New Delhi.
2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky , 2013. Computer Organization, 5<sup>th</sup> edition, Tata McGraw – Hill Publications, New Delhi.

| Units | Chapters/Sections  |
|-------|--|
| I     | Book1-2(2.1--2.4) -3(3.1--3,3.4,3.6,3.7,3.8)                           |
| II    | Book1--5(5.1,5.2,5.3,5.5,5.6,5.7,5.8,5.9,5.10)-6(6.1--6.8),8(8.1--8.3) |
| III   | Book2-1(1.1—1.8), 2(2.4,2.5,2.7,2.8)                                   |
| IV    | Book2-4(4.1,4.2,4.4,4.5,4.6)<br>-5(5.1,5.2,5.3,5.5-5.5,5.7)            |
| V     | Book2-(6.1-6.3,6.6,8.1-8.3,9.1,9.2,7.1-7.4)                            |

**Reference Books:**

1. Morris Mano, 2012. Digital Logic & Computer Design, 5<sup>th</sup> edition , Prentice Hall of India publishing, New Delhi.
2. John P.Hayes, 2012. Computer Architecture and Organization, 3<sup>rd</sup> edition, Tata Mcgraw-hill education private limited, Delhi.
3. Morris Mano, 2011. Computer System Architecture, 4<sup>th</sup> edition , Prentice Hall of India publishing.New Delhi.
4. [https://www.tutorialspoint.com/computer\\_logical.../boolean\\_algebra.html](https://www.tutorialspoint.com/computer_logical.../boolean_algebra.html)
5. [www.byte-notes.com/number-system-computer](http://www.byte-notes.com/number-system-computer)

**Course designer:**

1. M. Hemalatha
2. S. Kumarappan

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|                           |                             |                    |            |
|---------------------------|-----------------------------|--------------------|------------|
| <b>Course</b>             | <b>Core Lab 1</b>           | <b>Int. Marks</b>  | <b>40</b>  |
| <b>Class</b>              | <b>I Year</b>               | <b>Ext. Marks</b>  | <b>60</b>  |
| <b>Semester</b>           | <b>I</b>                    | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL11</b>               | <b>Hours/ Week</b> | <b>3</b>   |
| <b>Title of the Paper</b> | <b>Programming in C lab</b> | <b>Credits</b>     | <b>2</b>   |

**Course Outcomes:**

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

1. Understanding the basics of C programming Logic, Syntax and Semantics..
2. To develop simple applications using C.

**Simple Programs:**

1. Simple Interest
2. Find the bigger from two numbers -ordinary/switch case/conditional operator methods
3. Find the biggest from three numbers
4. Check the given number is odd or even-ordinary/switch case/conditional operator methods
5. Prime no checking
6. Print all prime numbers between any two given limits  
Check the given character is vowels or not
7. Perform various arithmetic operation using switch case
8. Find the sum of digits of a given number
9. Binary to decimal-decimal to binary conversion

**Arrays**

1. Arrange "n" numbers in ascending order and descending order
2. Arrange "n" strings in alphabetic order
3. Palindrome checking
4. Matrix addition ,subtraction and multiplication

**Function and Structure**

1. Calculate the factorial value by recursion
2. Reverse a string by recursion
3. Mark list processing-structure and call by value technique
4. Mark list processing-structure and call by reference technique
5. EB bill calculation- structure and call by value technique
6. EB bill calculation- structure and call by reference technique

**Files**

1. Create a data file to store 'n' numbers and separate odd and even numbers
2. Create a data file to store 'n' characters and separate vowels and non-vowels

**Course designers:**

1. M. Hemalatha
2. S. Kumarappan

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|                           |                           |                   |            |
|---------------------------|---------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 2</b>         | <b>Int.Marks</b>  | <b>40</b>  |
| <b>Class</b>              | <b>I Year</b>             | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>I</b>                  | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL12</b>             | <b>Hours/Week</b> | <b>3</b>   |
| <b>Title of the Paper</b> | <b>Digital Design Lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

- Understand the functions of Basic Gates.
- Learning the truth tables of logic gates using ICs.
- create various systems by using the digital ICs.

Apparatus Required

:-

Digital lab kit, single strand wires, breadboard, TTL IC's.

Digital Design Lab Manual.

1. Verification of truth tables of logic gates using TTL ICs..
2. Implementation and verification of universal logic gates.
3. Justifying the Boolean Equation using Combinational Logic Circuits.
4. Justifying the De Morgan's Law using Combinational Logic Circuits.
5. Design, and verify the Binary Half adder and Full adder by Logic Circuits.
6. Design, and verify the Binary Half subtracter and Full subtracter by Logic Circuits.
7. Implementation and verification of Decoder using logic gates.
8. Implementation and verification of De-multiplexer using logic gates
9. Implementation and verification of Encoder using logic gates.
10. Verification of state tables of RS,JK flip-flops using NAND & NOR gates.

**Course designers**

1. Mr. S. Kumarappan.
2. Ms.C.D.Balapriya

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|                           |                             |                    |            |
|---------------------------|-----------------------------|--------------------|------------|
| <b>Course</b>             | <b>Core 3</b>               | <b>Int. Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>I Year</b>               | <b>Ext. Marks</b>  | <b>75</b>  |
| <b>Semester</b>           | <b>II</b>                   | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI21</b>                | <b>Hours/ Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>Object Oriented</b>      | <b>Credits</b>     | <b>4</b>   |
|                           | <b>Programming with C++</b> |                    |            |

**Course Outcomes:**

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

1. Understand the concepts of oops.
2. Analyze the pros and cons of concepts oops.

**Unit-I: 12 hours**

**Principles of Object Oriented Programming:** Software Crisis-Software Evolution- A look at Procedure –Oriented Programming- Object Oriented programming Paradigm-Basic concepts of Object –Oriented Programming-Benefits of Oops. **Tokens, Expressions and Control Structures:** Introduction-Tokens-Keywords-Identifiers and Constants-Basic data types-user Defined data types-Storage classes-Derived Data types-Symbolic Constants-Type compatibility-Declaration of variables-Dynamic initialization of variables-Reference variables-Operators in C++ -Scope Resolution Operator. **Classes and objects:** Introduction-C Structures Revisited-Specifying a Class-Defining Member Functions-A C++ Program with Class-Making an outside function inline-Nesting of Member Functions-Private Member Functions-Arrays with in a Class-Memory Allocation for objects-Static data member- Static member functions-Array of objects-Object as function argument-Friendly functions-Returning objects-Const member functions.

**Unit-II: 12 hours**

**Constructors and Destructors:** Introduction-Constructors-Parameterized constructors-Multiple Constructors in a class -Constructors with default Arguments-Dynamic Initialization of objects-Copy Constructor-Dynamic Constructor-Destructors.

**Unit-III: 12 hours**

**Operator Overloading and Type conversions:** Introduction- Defining Operator Overloading-Overloading unary operators – Overloading Binary Operators-Overloading Binary operators using friends – Manipulation of strings using operators –Some other operator overloading examples- Rules for overloading operators.

**Unit-IV: 12 hours**

**Inheritance: Extending Classes:** Introduction-Defining Derived Classes-Single Inheritance-Making a Private Member Inheritable-Multilevel inheritance-Multiple inheritance-Hierarchical inheritance-Hybrid inheritance-Virtual Base Classes- Abstract Classes-Constructors in Derived Classes

**Pointers and Virtual Functions & Polymorphism:** Introduction – Pointer – Pointers to Objects – this Pointer – Pointers to Derived classes.

**Unit -V :**

**12 hours**

**Working with Files:** Introduction-Classes for File Stream Operations-Opening and closing a File-Detecting End-of-File-More about Open(): File Modes-File Pointers and their Manipulations-Sequential Input and output Operations-Updating a File-Random Access-Error Handling During File Operations-Command Line Arguments.

**Text Books:**

1. E.Balagurusamy, 2013, Object Oriented Programming With C++, 6<sup>th</sup> edition, Tata McGraw – Hill publications, New Delhi.

| UNIT | Chapter /Sections                          |
|------|--|
| I    | 1(1.1 to 1.6),3(3.1 to3.15),5(5.1 to 5.17) |
| II   | 6(6.1 to 6.8,6.11)                         |
| III  | 7(7.1 to 7.8) , 9(9.1 to 9.6)              |
| IV   | 8(8.1 to 8.11)                             |
| V    | 11(11.1 to11.10)                           |

**Reference Books:**

1. Well Dale, Jones, 2015, C++ Plus Data structures, 6<sup>th</sup> edn, Bartlett.
2. Yashavant Kanetkar, 2012, Let us C++, Second edn, BPB Publications
3. John R.Hubbard, 2012, Data Structures with C++ Tata Mc-Graw –Hill Education Private Limited, New Delhi.

**Course designers :**

Mrs.M.Hemalatha

Ms.C.D.Balapriya

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|                           |                             |                    |            |
|---------------------------|-----------------------------|--------------------|------------|
| <b>Course</b>             | <b>Core 4</b>               | <b>Int. Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>I Year</b>               | <b>Ext. Marks</b>  | <b>75</b>  |
| <b>Semester</b>           | <b>II</b>                   | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI22</b>                | <b>Hours/ Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>Software Engineering</b> | <b>Credits</b>     | <b>4</b>   |

**Course Outcomes:**

On the successful completion of the course, students will

- 1.Be familiar with software engineering techniques, procedures & tools.
- 2.Be aware of current trends and technologies in software engineering.
- 3.Create software projects by applying software engineering concepts.

**Unit -1: 11hours**

**Introduction to Software Engineering:** Some definitions – Some Size factors – Quality and Productivity Factors – Managerial issues–**Planning a Software project**– Defining the Problem – Developing a solution Strategy – Planning the development process – prototype model – Planning an Organizational Structure – Other planning activities.

**Unit -II: 14hours**

**Software Cost Estimation:** Software Cost factors – Software cost estimation Techniques- Expert Judgement – Delphi Cost Estimation – Work Break Down Structure- Algorithmic Cost Model – Staffing- level estimation -Estimating Software Maintenance Costs.

**Unit -III: 10hours**

**Software Requirements Definition:** The Software Requirements Specification – Formal Specification Techniques –Language and Processor for Requirement Specification: PSL / PSA – RSL / REVS – Structured Analysis and Design Technique(SADT) – Structured System Analysis (SSA) – GIST.

**Unit -IV: 15hours**

**Software Design:** Fundamental Design Concepts: Abstraction – Information Hiding – Structure – Modularity – Concurrency – Verification – Aesthetics – Modules and modularizing Criteria – Coupling and Cohesion – Other Modularization Criteria – Design Notations: Data Flow Diagrams – Structure Charts – HIPO Diagrams – Procedure Templates – Pseudo code – Structured Flowchart -Structure English – Decision tables– Design Techniques – Detailed Design Consideration – Real time and distributed system design – test plan – milestones, walkthrough and Inspection .

**Unit-V: 10 hours**

**Verification and validation Techniques:** Quality assurance- walkthroughs and Inspections –static Analysis- symbolic Execution unit testing and debugging—system testing—formal verification.



**Text Books:**

Richard.E.Fairely, 2014 Reprint. Software Engineering Concepts, Tata McGraw – Hill Education Private Limited, New Delhi.

| UNIT | CHAPTER/SECTIONS)     |
|------|-----------------------|
| I    | 1(1.1-1.4),2(2.1—2.5) |
| II   | 3(3.1-3.4)            |
| III  | 4(4.1—4.4)            |
| IV   | (5.1—5.8)             |
| V    | 8(8.1—8.7)            |

**Reference Books:**

1. Ian Sommerville, 2015. Software Engineering , 9<sup>th</sup> edition, Pearson Indian Education Service Private Limited, Chennai.
2. Pankaj Jalote 2015, An Integrated Approach to Software Engineering, 3<sup>rd</sup> edition, Narosa Publishing House, New Delhi.
3. Roger S.Pressman, 2015. Software Engineering A Practitioner’s Approach, 7<sup>th</sup> edition, Tata McGraw – Hill Education Private Limited, New Delhi.

**Course designers :**

- 1) Mrs.M.Hemalatha
- 2) Mrs.P.Praveena

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|                           |                                 |                    |            |
|---------------------------|---------------------------------|--------------------|------------|
| <b>Course</b>             | <b>Core Lab 3</b>               | <b>Int. Marks</b>  | <b>40</b>  |
| <b>Class</b>              | <b>I Year</b>                   | <b>Ext. Marks</b>  | <b>60</b>  |
| <b>Semester</b>           | <b>II</b>                       | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL21</b>                   | <b>Hours/ Week</b> | <b>3</b>   |
| <b>Title of the Paper</b> | <b>Object Oriented</b>          | <b>Credits</b>     | <b>2</b>   |
|                           | <b>Programming with C++ Lab</b> |                    |            |

**Course Outcomes:**

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

1. Understand the concepts of C++ Programming.
2. Creating Classes Programs to implement oops concepts.
3. Developing the data structures using C++.

**Simple Programs**

1. Write a c++ program for List of odd numbers
2. Write a c++ program for Sum of N numbers
3. Write a c++ program for List of factorial values
4. Write a c++ program to print individual Digit to words
5. Write a c++ program for Pascal triangle
6. Write a c++ program to check a given number is Prime or not
7. Write a c++ program for Sum of square of N numbers
8. Write a c++ program for calculating Power value
9. Write a c++ program for Demo for break & continue

**Classes & Object**

1. Write a c++ program for simple Pay bill preparation
2. Write a c++ program for Invoice bill generation
3. Write a c++ program for preparing Student mark statement
4. Write a c++ program for finding Cube value using inline function
5. Write a c++ program for deriving Multiplication table
6. Write a c++ program for the demo of Constructor & destructor
7. Write a c++ program for sum of two objects using Friend function

**Polymorphism**

1. Write a c++ program for Function overloading process
2. Write a c++ program for unary Operator overloading process
3. Write a c++ program for Binary operator overloading Process

**Inheritance**

1. Write a c++ program for Single inheritance
2. Write a c++ program for hybrid inheritance

**File**

1. Write a c++ program for File creation and to list the file content
2. Write a c++ program for File manipulations

**Course designers :**

Mrs. M.Hemalatha  
Ms. C.D.Balapriya

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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|                           |   |                   |            |
|---------------------------|---|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 4</b>                               | <b>Int.Marks</b>  | <b>40</b>  |
| <b>Class</b>              | <b>I Year</b>                                   | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>II</b>                                       | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL22</b>                                   | <b>Hours/Week</b> | <b>3</b>   |
| <b>Title of the Paper</b> | <b>Structure Program Logic &amp; Design Lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

1. Understand the basics and usefulness of an algorithm, and Program Logics.,
  2. Understand a flowchart and its advantages and limitations,
  3. Steps involved in designing a program.
- General Approaches in Algorithm Design
  - Writing simple Logics using Algorithm.
  - Expressing Algorithms, Analysis of Algorithms
  - Drawing Flowcharts to Programming Logic using Flow Chart Tools
  - Advantages of Using Flowcharts, Limitations of Using Flowcharts
  - When to Use Flowcharts, Flowchart Symbols & Guidelines, Types of Flowcharts
  - Program Design
  - Activities involved in Program Design
  - Object-Oriented Formulations

**Course designers :**

Mr. S. Kumarappan

Mrs.P.Praveena

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|                           |                                 |                    |    |
|---------------------------|---------------------------------|--------------------|----|
| <b>Course</b>             | AECC                            | <b>Int. Marks</b>  | 15 |
| <b>Class</b>              | I Year                          | <b>Ext. Marks</b>  | 35 |
| <b>Semester</b>           | II                              | <b>Max. Marks</b>  | 50 |
| <b>Sub. Code</b>          | SESI21                          | <b>Hours/ Week</b> | 2  |
| <b>Title of the Paper</b> | Effective Communicative English | <b>Credits</b>     | 2  |

**Course Outcomes:**

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

1. Understand the concepts of Communication.
2. Analyze strategies of Communication.
3. Realize the importance of reading and understanding.

**Unit-I:**

**15hours**

**Introduction:** Theory of Communication, Types and modes of Communication -  
**Language of Communication:** Verbal and Non-verbal (Spoken and Written) Personal-Social,  
Business Barriers and Strategies-Intra-personal-Inter-personal and Group communication -  
**Speaking Skills:** Monologue –Dialogue- Group Discussion- Effective Communication/ Mis-  
Communication- Interview -Public Speech

**Unit-II:**

**15hours**

**Reading and Understanding** -Close Reading -Comprehension -Summary  
Paraphrasing- Analysis and Interpretation -Translation(from Indian language to English and  
vice-versa)-Literary/Knowledge Texts-Writing Skills -Documenting Report -Writing Making  
notes -Letter writing

**Text Book:**

Dr. Gauri Mishra, DrRanjanaKaul, DrBratiBiswas , 2016, Language through  
Literature , Primus Book

**Reference Book:**

Kumar S.P , 2013, Language Literature and Creativity, Orient Blackswan

**Course Designers**

1. Mr. S. Kumarappan
2. Mrs.P.Praveena

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|                           |                        |                   |              |
|---------------------------|------------------------|-------------------|--------------|
| <b>Course</b>             | <b>: Core 5</b>        | <b>Int.Marks</b>  | <b>: 25</b>  |
| <b>Class</b>              | <b>: II Year</b>       | <b>Ext. Marks</b> | <b>: 75</b>  |
| <b>Semester</b>           | <b>: III</b>           | <b>Max.Marks</b>  | <b>: 100</b> |
| <b>Sub.Code</b>           | <b>: SMI31</b>         | <b>Hours/Week</b> | <b>: 5</b>   |
| <b>Title of the Paper</b> | <b>Data Structures</b> | <b>Credits</b>    | <b>4</b>     |

**Course Outcomes:**

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

1. apply and implement learned algorithm design techniques and data structures to solve problems
2. obtain basic abilities to analyze algorithms and to determine algorithm's time efficiency.

**UNIT – I : Introduction**

**15 hours**

Definitions – Concept of Data Structures – Overview of Data Structures –Implementation of Data Structures. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays. Linked Lists: Definition – Single Linked List –Circular Linked List – Double Linked List – Circular Double Linked List.

**UNIT – II : Stacks**

**15 hours**

Introduction – Definition – Representation of a Stack – Operations on Stacks. Queues: Introduction - Definition – Representation of Queues – Various Queue Structures.

**UNIT – III : Trees**

**15 hours**

Trees: Basic Terminologies-Definition and Concepts- Representation of Binary Trees – Operations on a Binary a Binary Tree-Insertion-Deletion-Traversal-Merging together Two Binary Trees. Types of Binary Trees-Binary Search Tree.

**UNIT – IV : Graphs**

**15 hours**

Introduction – Graph Terminologies – Representation of Graphs-Set Representation- Linked Representation – Matrix Representation – Operations on Graphs.

**UNIT – V : Sorting**

**15 hours**

Preliminaries-Insertion Sort -Shell Sort – Heap Sort – Merge Sort – Quick Sort- Sorting Large Structures – Bucket Sort.

**TEXT BOOKS:**

1. D.Samanta,2016, “Classic Data Structures”, Prentice-Hall India Pvt Ltd.
2. Mark Allen Weiss, 2014 Seventeenth Impression,“Data Structures and Algorithm Analysis in C“, Pearson Education, Second Edition.

| <b>UNIT</b> | <b>Chapter /Sections</b>                           |
|-------------|--|
| I           | Book 1: 1,2, 3(3.1 to 3.5)                         |
| II          | Book 1: 4(4.1 to 4.4),5 (5.1 to 5.4)               |
| III         | Book 1: 7 (7.1 to 7.4), 7.5 (7.5.2)                |
| IV          | Book 1: 8 (8.1 to 8.4)                             |
| V           | Book 2: 7(7.1, 7.2, 7.4, 7.5, 7.6 ,7.7, 7.8, 7.10) |

**Reference Books:**

1. Thomas H. Carman, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein 2009, "Introduction to Algorithms" , 3<sup>rd</sup> Edition, U.S.A.
2. Robert L. Krus, Bruce P. Leung, Glovies L. Tondo, 1996, "Data Structures and Program Design in C", Pearson,2<sup>nd</sup> Edition.

**Course designers :**

Mrs. M.Hemalatha

Ms. C.D.Balapriya

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|                           |   |                   |            |
|---------------------------|---|-------------------|------------|
| <b>Course</b>             | <b>Core 6</b>                                 | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>II Year</b>                                | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>III</b>                                    | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI32</b>                                  | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Relational Database Management Systems</b> | <b>Credits</b>    | <b>4</b>   |

**Course Outcomes:**

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

1. Understand the basis of database models.
2. Familiarize with Relational algebra and calculus.
3. Do projects using RDBMS.

**Unit I:** **16 hours**

**Introduction:** Flat file – Database System – Database – Actionable for DBA. **The Entity Relationship Model:** Introduction – The Entity Relationship Diagram. **Data Models:** Introduction – Relational Approach – The Hierarchical Approach – The Network Approach.

**Unit II:** **14 hours**

**Storage Structure:** Introduction – File organization and addressing schemes. Relational Data Structure: Introduction Relations – Domains. **Architecture of System R and Oracle:** Introduction Architecture of System R.

**Unit III:** **16 hours**

**Normalization:** Introduction- Normalization – Purpose of Normalization – Definition of Functional Dependence – Normal Forms – **Structured Query Language:** Features of SQL – Select SQL Operations – Grouping the output – Querying from multiple tables – Retrieval using set operators – Nested Queries – View creation. TSQL – Triggers and Dynamic Execution: Introduction – Transact SQL.

**Unit IV:** **14 hours**

**Procedure Language – SQL:** Introduction – PL/SQL Block Structure – PL/SQL Tables: Relational Algebra and Relational Calculus: Introduction – Algebraic Operations. **Concurrency Control and automatic recovery:** Row level Locks, Automatic Recovery and Backup – Backup Techniques - Advanced Backup Techniques.

**Unit V:** **15 hours**

**Relational Data base Design:** Features of Good Relational Designs – Atomic Domains & First Normal - Decomposition using Functional Dependencies - Decomposition using Multivalued Dependencies

**Test Books:**

1. Rajesh Narag, 2011, Database Management Systems, PHI Learning Private Ltd.
2. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, Reprint 2016, Database System Concepts, 6<sup>th</sup> Edition, McGraw Hill Education, New Delhi.

| Unit | Chapter                |
|------|------------------------|
| I    | Book1: 1,2,3.          |
| II   | Book1: 4,5,6           |
| III  | Book1: 7,8,9           |
| IV   | Book1: 10,12,13        |
| V    | Book2: 8.1,8.2,8.3,8.6 |

**Reference books:**

1. Henry F.Korth, 2005, Database System & Concepts, McGraw Hill, New Delhi.
2. Bob Bryla, Kevin Loney, 2014, Oracle Database 12c The Complete Reference, McGraw Hill, New Delhi.
3. [www.studytonight.com](http://www.studytonight.com)

**Course designers:**

1. Mrs. P. Praveena
2. Mr. S. Kumarappan



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|                           |                                      |                   |              |
|---------------------------|--------------------------------------|-------------------|--------------|
| <b>Course</b>             | <b>: Core Lab 5</b>                  | <b>Int.Marks</b>  | <b>: 40</b>  |
| <b>Class</b>              | <b>: II Year</b>                     | <b>Ext. Marks</b> | <b>: 60</b>  |
| <b>Semester</b>           | <b>: III</b>                         | <b>Max.Marks</b>  | <b>: 100</b> |
| <b>Sub.Code</b>           | <b>: SMIL31</b>                      | <b>Hours/Week</b> | <b>: 4</b>   |
| <b>Title of the Paper</b> | <b>: Data Structures using C Lab</b> | <b>Credits</b>    | <b>2</b>     |

**Course Outcomes:**

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

1. Design and analyze time and space efficiency of the data structure.
2. Gain knowledge in practical applications of data structure.

1. Write a C program to search an element in a two dimensional array
2. Using iteration and recursion concepts write programs for finding the element in the array using the Binary search method.
3. Write a C program to perform Binary tree operations.
4. Write a C program to implement Queue and perform Queue operations using an Array.
5. Write a C program to implement Stack and perform Stack operations using linked list.
6. Write a C program to create a Linked List and perform operations such as insert, delete, update.
7. Write a C program to implement Bubble Sort.
8. Write a C program to implement Shell Sort.
9. Write a C program to implement Quick Sort.
10. Write a C program to implement Merge Sort.
11. Write a C program to simulate various tree traversal techniques.

**Course designers :**

Mrs. M.Hemalatha  
Ms. C.D.Balapriya

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|                           |                   |                   |            |
|---------------------------|-------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 6</b> | <b>Int. Marks</b> | <b>40</b>  |
| <b>Class</b>              | <b>II Year</b>    | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>III</b>        | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL32</b>     | <b>Hours/Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>RDBMS Lab</b>  | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

1. query the RDBMS databases.
2. develop real time database projects.

**SQL**

1. Implementation of queries for student Database
2. Implementation of queries for employee Database
3. Implementation of queries for employee & Department Database
4. Trigger, procedure & Function Creation.
5. Package Creation.
6. Drop command.

**PL / SQL**

1. Factorial of a Number
2. Check whether a number is prime or not
3. Fibonacci Series
4. Reversing the String
5. Swapping of two numbers
6. Odd or even number

**Course designers**

1. Ms.C.D.Balapriya
2. Mrs. P.Praveena

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|                           |                         |                   |            |
|---------------------------|-------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 7</b>           | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>II Year</b>          | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>IV</b>               | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI41</b>            | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Operating System</b> | <b>Credits</b>    | <b>4</b>   |

**Course Outcomes:**

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

1. Get fundamental knowledge on operating systems.
2. Recover critical section problems and dead locks.
3. Familiarize with the concepts of process, memory and file management.

**Unit I:** **14 hours**

**Introduction:** What Operating Systems Do - Computer-System Organization - Computer-System Architecture - Operating System Structure - Operating System Operations. System Structures: Operating - System Services - User and Operating Interface - System calls - Types of System calls - System Programs.

**Unit II:** **15 hours**

**Process Management:** Process Concept – Process Scheduling – Operation on Processes – Inter- process communication – Process Scheduling: Basic concepts – Scheduling Criteria – Scheduling Algorithms – Multiple Processor Scheduling –Real-time CPU Scheduling.

**Unit III:** **16 hours**

**Synchronization:** The Critical Section Problem – Synchronization Hardware – Semaphores- classic problems of synchronization – Monitors. Deadlocks: Dead lock characterization – Methods for handling Dead locks – Dead lock prevention - Dead lock avoidance – Dead Lock detection - Recovery from Dead lock.

**Unit IV:** **15 hours**

**Memory Management:** Memory Management Strategies - Swapping - Contiguous Memory Allocation – Segmentation – Paging - Virtual Memory Management: Demand Paging – Page replacement – Thrashing.

**Unit V:** **15 hours**

**Storage Management:** File System - File Concept. Implementing File Systems: File System structure – File system implementation – Directory implementation, Allocation Methods. Mass- Storage Structure: Disk structure – Disk scheduling – Disk Management.

**Text Book:**

Abraham Silberschatz, Peter B Galvin & Greg Gagne, Reprint 2016, Operating System Concepts, 9<sup>th</sup> Edition, John Wiley & Sons (ASIA) Pvt. Ltd.

| Unit | Chapters                            |
|------|-------------------------------------|
| I    | 1.1 to 1.5,2.1 to 2.5               |
| II   | 3.1 to 3.4, 5.1, 5.2, 5.3, 5.5, 5.6 |
| III  | 6.2,6.4,6.6,6.7,6.8, 7.2 to 7.7     |
| IV   | 8.2,8.3,8.4,8.5,9.2,9.4,9.6         |
| V    | 10.1,11.1 to 11.4, 12.2,12.4,12.5   |

**Reference books:**

1. Harvey M. Deitel, 2002, Operating Systems, 2<sup>nd</sup> Edition, Pearson Education Pvt. Ltd.,
2. William Stallings, Fourth Impression 2016, Operating System, , 7<sup>th</sup> Edition, Pearson
3. Pradeep K. Sinha, 2007, Distributed Operating Systems, PHI Learning Private Limited.

**Course designers**

1. Mrs. P. Praveena
2. Ms. C.D. Balapriya

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|                           |                           |                   |            |
|---------------------------|---------------------------|-------------------|------------|
| <b>Course</b>             | <b>: Core 8</b>           | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>: II Year</b>          | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>: IV</b>               | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>: SMI42</b>            | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>: Java Programming</b> | <b>Credits</b>    | <b>4</b>   |
| <b>Course Outcomes:</b>   |                           |                   |            |

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

1. Understand and apply the core programming Logics
2. Understand the reason of inheritance, concurrency, and utilities
3. Apply the concepts like I/O Streams, Applet and Abstract Window Toolkit.

**Unit I:** **13 hours**

**The History and Evolution of Java:** Java's Lineage-The Creation of Java-How Java Changed the Internet-Java's Magic: The Bytecode - Servlets: Java on the Server Side-The Java Buzzwords-The Evolution of Java. **An Overview of Java:** Object-Oriented Programming-Two Control Statements-Using Blocks of Code-Lexical Issues-The Java Class Libraries. **Data Types, Variables, and Arrays:** Java Is a Strongly Typed Language-The Primitive Types-Integers-Floating-Point Types-Characters-Booleans-A Closer Look at Literals Variables-Type Conversion and Casting-Automatic Type Promotion in Expressions-Arrays. **Operators:** Arithmetic Operators-The Bitwise Operators-Relational Operators-Boolean Logical Operators-The Assignment Operator-The ? Operator-Operator Precedence. **Control Statements:** Java's Selection Statements-Iteration Statements-Jump Statements. **Introducing Classes:** Class Fundamentals-Declaring Objects-Assigning Object Reference Variables-Introducing Methods-Constructors-The this Keyword-Garbage Collection-The finalize( ) Method-A Stack Class.

**Unit II:** **17 hours**

**Inheritance:** Inheritance Basics- Using super-Creating a multilevel Hierarchy-When constructor called--Method overriding-Dynamic method dispatch-Using Abstract classes-using final with inheritance. **Packages and Interfaces:** Packages - Access protection-Importing packages-interfaces- Default Interface Methods- Use static Methods in an Interface.

**Unit III:** **18 hours**

**Exception Handling:** Exception Handling Fundamentals- Exception Types-Uncaught Exceptions- Using try and catch - Multiple catch Clauses-Nested try Statements-

throw-throws-finally-Java's Built-in Exceptions-Creating Your Own Exception Subclasses- Chained Exceptions- Three Recently Added Exception Features-Using Exceptions. **Multithreaded Programming:** Java Thread Model-The Main Thread-Creating a Thread-Creating Multiple Threads-Using isAlive() and join()- Thread Priorities - Synchronization-Interthread Communication-Suspending, Resuming and Stopping Threads- Obtaining A Thread's State -Using Multithreading.

**Unit IV:**

**12 hours**

**Enumerations, Autoboxing:** Enumerations- Type Wrappers – Autoboxing. **String Handling:** String Constructors - String Length –Special String Operations -Character Extraction-String Comparison-Searching Strings-Modifying a String-Date Conversion Using ValueOf() - Changing the Case of Characters Within a String - Joining Strings - Additional String Methods-StringBuffer-String Builder. **Exploring java.lang:** Primitive Type Wrappers.

**Unit V:**

**15 hours**

**The Applet Class :** Two Types of Applets - Applet Basics-Applet Architecture -An Applet Skeleton-Simple Applet Display Methods-Requesting Repainting -Using the Status Window-The HTML APPLET Tag-Passing Parameters to Applets. **Introducing the AWT - Working with Windows, Graphics, and Text:** AWT Classes-Window Fundamentals - Working with Frame Windows-Creating a Frame Window in an AWT-Based Applet-Creating a Windowed Program-Displaying Information Within a Window-Introducing Graphics. **Using AWT Controls, Layout Managers, and Menus:**AWT Control-Labels-Using-Applying Check Boxes CheckboxGroup-Choice Controls-Using Lists-Managing Scroll Bars-Using a TextField-Using a TextArea-Understanding Layout-Menu Bars and Menus.

**TEXT BOOK**

Herbert Schildt, 2014, Java The Complete Reference, Ninth Edition, Oracle Press,New Delhi.

| Unit | Chapters/Section  |
|------|---|
| I    | 1, 2, 3,4,5,6.  |
| II   | 8, 9.   |
| III  | 10, 11.   |
| IV   | 12(page 263 – page 279 ),16,17(page 441-page 458).                            |
| V    | 23 (page 747 – page 763 ), 25(page 797 – page 815) , 26 (page 863 –page 870). |

**REFERENCE BOOKS**

1. Bruce Eckel, 2000, *Thinking in Java*, Pearson Education Asia, 2nd Edition.
2. Patric Naughton, *Java Hand Book*, TataMcgraw Hill, New Delhi

**Course designers**

1. Mr. S. Kumarappan.
2. Ms.C.D.Balapriya

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|                           |                             |                   |            |
|---------------------------|-----------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 7</b>           | <b>Int. Marks</b> | <b>40</b>  |
| <b>Class</b>              | <b>II Year</b>              | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>IV</b>                   | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMIL41</b>               | <b>Hours/Week</b> | <b>4</b>   |
| <b>Title of the Paper</b> | <b>Operating System Lab</b> | <b>Credits</b>    | <b>2</b>   |

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

1. To get fundamental knowledge on Unix operating System utilities.
2. Able to handle 'vi' editor and to write shell scripts.

1. Fibonacci Series
2. Sorting of number
3. Reversing number & summing of digit
4. Sorting of number using "nawk" utility.
5. Calculate NCR using Recursion
6. Display the Factorial Series
7. File operations on Student database
8. Performing file operation on a shell script.
9. Performing arithmetic operations
10. Unix utilities.

**Course designers**

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2. Ms.C.D.Balapriya

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|                           |                               |                   |              |
|---------------------------|-------------------------------|-------------------|--------------|
| <b>Course</b>             | <b>: Core Lab 8</b>           | <b>Int.Marks</b>  | <b>: 40</b>  |
| <b>Class</b>              | <b>: II Year</b>              | <b>Ext. Marks</b> | <b>: 60</b>  |
| <b>Semester</b>           | <b>: IV</b>                   | <b>Max.Marks</b>  | <b>: 100</b> |
| <b>Sub.Code</b>           | <b>: SMIL42</b>               | <b>Hours/Week</b> | <b>: 4</b>   |
| <b>Title of the Paper</b> | <b>: Java Programming Lab</b> | <b>Credits</b>    | <b>2</b>     |

**Course Outcomes:**

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

- Understand and apply the java programming Logics
- Learning the basic concepts & techniques of java.
- Generate stand alone applications.
- Generate an application based upon the concepts of java graphics & applet.

Java Programming Lab Manual.

1. Program to define a class, describe its constructor, overload the Constructors and instantiate its object
2. Program to create Arrays and vectors
3. Work with strings using String, String Buffer and String Builder classes.
4. Program to implement Vector class and its methods
5. Program to implement Wrapper classes and their methods
6. Program to implement inheritance and demonstrate use of method overriding
7. Program to demonstrate use of implementing interfaces
8. Program to implement the concept of importing classes from user defined package and creating packages.
9. Program to implement the concept of threading by extending Thread Class
10. Program to implement the concept of threading by Runnable Interface.
11. Program to implement the concept of Exception Handling using predefined exception
12. Program to implement the concept of Exception Handling by creating user defined exceptions.
13. Program using Applet for configuring Applets by passing parameters
14. Java Program to demonstrate Keyboard event
15. Java Program to demonstrate Mouse events
16. Java programs for using Graphics class

**Course designers**

1. Mr. S. Kumarappan.
2. Ms.C.D.Balapriya



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|                           |                              |                    |            |
|---------------------------|------------------------------|--------------------|------------|
| <b>Course</b>             | <b>Allied 4</b>              | <b>Int. Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>II Year</b>               | <b>Ext. Marks</b>  | <b>75</b>  |
| <b>Semester</b>           | <b>IV</b>                    | <b>Max. Marks</b>  | <b>100</b> |
| <b>Sub. Code</b>          | <b>SAI41</b>                 | <b>Hours/ Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Quantitative Aptitude</b> | <b>Credits</b>     | <b>5</b>   |

**Course Outcomes:**

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

1. Solve various quantitative and aptitude problems.
2. Clear competitive examinations with high score.

|   |                 |
|---|-----------------|
| <b>Unit I:</b>  | <b>15 hours</b> |
| Numbers, HCF & LCM of Numbers, Decimal Fractions, Simplification, Problems on Ages                |                 |
| <b>Unit II:</b>   | <b>15 hours</b> |
| Percentage, Profit & Loss, Ratio & Proportion, Time & Work, Time & Distance.                      |                 |
| <b>Unit III:</b>  | <b>15 hours</b> |
| Pipes & Cistern, Alligation or Mixture, Problems on Trains, Probability                           |                 |
| <b>Unit IV:</b>   | <b>15 hours</b> |
| Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs                              |                 |
| <b>Unit V:</b>  | <b>15 hours</b> |
| Simple Interest , Compound Interest, Calendar, Odd man out & Series, Permutations & Combinations. |                 |

**Text Books:**

1. Aggarwal . R.S., 2016. Quantitative Aptitude For Competitive Examinations (Fully solved) As Per New Examination Pattern 7<sup>th</sup> Revised edition, S. Chand & Company Pvt Ltd, New Delhi.

| <b>Unit</b> | <b>Chapters/ Section</b>  |
|-------------|---------------------------|
| I           | Book1: 1, 2, 3, 4, 8      |
| II          | Book1: 10, 11, 12, 15, 17 |
| III         | Book1: 16, 18, 20, 31     |
| IV          | Book1:36, 37, 38, 39      |
| V           | Book1: 21, 22, 27, 30,35, |

**Reference Books:**

1. Abhijit Guha, 2014, Quantitative Aptitude For Competitive Examinations, 5<sup>th</sup> edition, Tata McGraw – Hill Publications, New Delhi.
2. Sijwali BS, Indu Sijwali, 2014. A New Approach to Reasoning Verbal & Non-Verbal Paperback , Arihant Publication

**Course Designers**

Mrs. M.Hemalatha  
Mrs. P.Praveena

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|                           |                         |                   |            |
|---------------------------|-------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 9</b>           | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>         | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>V</b>                | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI51</b>            | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>. Net Technology</b> | <b>Credits</b>    | <b>5</b>   |

**Course Outcomes:**

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

1. Understand .Net frame work.
2. Become familiarize with C# Advanced Windows Programming.
3. Create applications on .NET IDE using C#

**Unit I: 14 hours**

**Overview of .Net Framework:** .NET Features – The Common Language Runtime (CLR) – The .NET Framework class Library – The Common Type System – Visual Studio .NET IDE 2005. **Windows Forms:** Window Forms Fundamentals – Windows MDI Forms – Creating Dialog boxes – Adding Controls to Forms – Handling Events.

**Unit II: 16 hours**

Decision Making and Branching – Decision making and Looping, Methods in C#, Handling array, Structures and Enumerations – Class and Objects.

**Unit III: 15 hours**

**Windows controls – Category 1:** the control class – Text boxes – Rich Text Boxes – Labels – Buttons. **Windows controls – Category 2:** Checkboxes – Radio Button – List Boxes – Combo boxes.

**Windows controls – Category 3:** Picture Boxes – Scroll Bars – Timers.

**Unit IV: 15 hours**

**Advanced Windows Programming: Graphics Handling, File Handling:** The File stream Class – Using stream Writer class, Binary Writer class, Binary Reader class – The file and directory classes. **User Controls:** Creating User Controls, Adding properties, methods, events, Using the ScrollableControl Class, ContainerControl class, Using System,Windows,Forms, UserControl class.

**Unit V: 15 hours**

**Data Access with ADO.NET:** ADO.NET Architecture – Advantages – ADO.NET Objects.

**Handling Database in Code:** Connection class – Command class – Data Adapter – The Dataset class – Data Reader class – The data table class – The data Row class – The data column class – Data Relation class.

**Text Books:**

1. J.G.R. Sathiaseelan, N. Sasikaladevi, 2009, Programming with C#.NET, PHI Learning Private Limited, New Delhi.
2. E. Balagurusamy, Reprint 2010, Programming in C# a primer,

| <b>Unit</b> | <b>Chapters</b>  |
|-------------|--|
| I           | Book1: 1.1 to 1.6, 2.1 to 2.5                            |
| II          | Book2: 6,7,8,11,12                                       |
| III         | Book1: 3.1 to 3.4 , 3.6 4.1, 4.2, 4.5 ,4.7,5.1, 5.2, 5.8 |
| IV          | Book1: 7.1, 7.2 , 7.3                                    |
| V           | Book1: 8.1 to 8.3,9.1 to 9.9                             |

**Reference books:**

1. Mathew Macdonald & Robert Standefer, 2008, ASP .NET complete Reference TMH.
2. Vijay Mukhi, 2009, C# the Basis, BPB Publication.

**Course designers**

- 1.Mrs. P. Praveena
2. Ms. C.D.Balapriya

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|                           |                                       |                   |            |
|---------------------------|---------------------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 10</b>                        | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>                       | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>V</b>                              | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMI52</b>                          | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Mobile Application Development</b> | <b>Credits</b>    | <b>4</b>   |

**COURSE OUTCOMES:**

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

1. Learn the characteristics and development of Android applications.
2. Understand the intricacies of UI required by Android applications.
3. Working with Graphics, Animations, Audio and Video.

**UNIT I** **14 hours**

**Getting an Overview of Android :** Introducing Android – Discussing about Android Applications – The Manifest File – Downloading and Installing Android – Exploring the Development Environment – Developing and Executing the First Android Application.

**UNIT II** **15 hours**

**Using Activities, Fragments and Intents in Android :** Working with Activities – Using Intents – Fragments – Using the Intent Object to Invoke Built-in Application.  
**Working with User Interface Using Views and ViewGroups :** Working with ViewGroups – Working with Views – Binding Data with the AdapterView Class.

**UNIT III** **17 hours**

**Working with User Interface Using Views and ViewGroups :** Designing the AutoTextCompleteView – Implementing Screen Orientation – Designing the Views Programmatically – Handling UI Events – Specialized Fragments – Creating Menus.  
**Handling Pictures and Menus with Views :** Working with Image Views – Designing Context Menu for Image View – Using the AnalogClock and DigitalClock Views – Embedding Web Browser in an Activity – Notifying the User.

**UNIT IV** **14 hours**

**Storing the Data Persistently :** Introducing the Data Storage Options – Using the Internal Storage – Using the External Storage – Using the SQLite Database - Working with Content Providers – **Working with Graphics and Animations :** Working with Graphics – Using the Drawable Object – Using the ShapeDrawable Object.

**UNIT V** **15 hours**

**Working with Graphics and Animations :** Working with the NinePatchDrawable Graphics – Understanding the concept of Hardware Acceleration – Working with Animations. **Audio, Video and Camera** – Role of Media PlayBack – Using MediaPlayer – Recording and Playing Sound.

**TEXT BOOKS:**

Pradeep Kothari ,2016,Android Application Development Black BOOK, dreamTech

| UNIT | Chapter / Page Nos.            |
|------|--------------------------------|
| I    | 2 (50-74)                      |
| II   | 3(Pg:80-126),4 (Pg: 135-172)   |
| III  | 4(Pg: 178-198) ,5(206-226)     |
| IV   | 6(Pg:229-262), 9(Pg: 330-340)  |
| V    | 9 (Pg: 343-351),10(Pg 362-375) |

**REFERENCE BOOKS:**

1. [Zigurd Mednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura](#), 2012, Programming Android, 2nd edn, O'Reilly Media
2. Alasdair Allan:2010. "iPhone Programming", O'Reilly.
3. Wei-Meng Lee: 2010. "Beginning iPhone SDK Programming with Objective-C", Wrox Wiley.
4. <http://developer.android.com/guide/components/activities.html> 6.

**COURSE DESIGNERS :**

1. Ms. C.D. Balapriya
2. Mrs. P. Praveena

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|                           |                          |                   |            |
|---------------------------|--------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 11</b>           | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>          | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>V</b>                 | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMI53</b>             | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Computer Networks</b> | <b>Credits</b>    | <b>4</b>   |

**COURSE OUTCOMES:**

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

1. Understand network, protocols and transmission media
2. Learn how to detect and correct errors in the network.
3. Get knowledge of network security and to use digital signature.

**UNIT I:** **15 hours**

**Introduction:** Data Communications – Networks – Network Types – Internet History - **Protocol Layering:** TCP/IP Protocol Suite - The OSI Model.

**UNIT II:** **15 hours**

**Physical Layer:** Data and Signals - Transmission Impairment – Performance - **Transmission Media** : Introduction - Guided Media – Unguided Media:Wireless- **Switching:** Circuit Switched Networks - Packet Switching – **Data Link Layer** : Introduction – Link Layer Addressing – **Error Detection And Correction** : Introduction - Types of Errors – Block Coding – Cyclic Codes – Checksum.

**UNIT III:** **15 hours**

**Data Link Control:** DLC Services - Data Link Layer Protocols – HDLC – Point to Point Protocol (PPP) – **Wired LANs : Ethernet** : Ethernet Protocol – Standard Ethernet – Fast Ethernet – Gigabit Ethernet.

**UNIT IV:** **15 hours**

**Unicast Routing** : Introduction - Routing Algorithms – Unicast Routing Protocols – **Multicast Routing** : Introduction – Multicasting Basics – IntraDomain Multicast Protocols – InterDomain Multicast Protocols.

**UNIT V:** **15 hours**

**Cryptography and Network Security:** Introduction – Confidentiality – Other Aspects of Security – **Internet Security** – Firewall.

**TEXT BOOK:**

Behrouz A. Forouzan : 2013. "Data Communications And Networking", Fifth Edition, Tata Mcgraw Hill Education (India ) Private Ltd.

| Units | Chapters/Sections   |
|-------|---|
| I     | 1(1.1 to 1.4), 2( 2.1 to 2.3)   |
| II    | 3(3.1, 3.4, 3.6), 7(7.1,7.2,7.3), 8(8.2, 8.3),9( 9.1, 9.2), 10(10.1,10.1.1, 10.2, 10.3, 10.4) |
| III   | 11(11.1, 11.2, 11.3, 11.4), 13(13.1, 13.2, 13.3, 13.4)  |
| IV    | 20(20.1, 20.2, 20.3), 21(21.1, 21.2, 21.3, 21.4)  |
| V     | 31(31.1 to 31.3), 32(32.4)  |

**REFERENCE BOOKS:**

1. Andrew S. Tanenbaum:2003. "Computer Networks", Fourth Edition, Pearson Prentice Hall.
2. Tularam M.Bansod: 2013. "Computer Networks", Kogent Learning Solutions Inc, Dreamtech Press.

**COURSE DESIGNERS**

C.D. Balapriya  
Mrs. P. Praveena

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|                           |                            |                   |            |
|---------------------------|----------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 9</b>          | <b>Int. Marks</b> | <b>40</b>  |
| <b>Class</b>              | <b>III Year</b>            | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>V</b>                   | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMEL51</b>              | <b>Hours/Week</b> | <b>6</b>   |
| <b>Title of the Paper</b> | <b>.NET Technology Lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

1. Understand .Net frame work.
  2. Become familiarize with C# Advanced Windows Programming.
  3. Create applications on .NET IDE using C#.
- 
1. Write a C# Program to check whether the given number is odd or even.
  2. Write a C# Program to implement function over loading.
  3. Write a C# program to convert the decimal number to binary and vice versa.
  4. Write a C# program for operator over loading.
  5. Write a C# program to implement different types of inheritance.
  6. Write a c # program to accept a number from the user & throw as exception if the number is not as even number.
  7. Create an application that allows the user to enter a number in the text box named 'getnum'. Check 'getnum' is palindrome or not print the result in a label when the user clicks on a button.
  8. Create an application which will ask the user to input his/her name and a message, display the two items concatenated in a label and change the format of the label using radio buttons and check boxes for selection, the user can make the labels' test bold, underlined or italic and change it's color. Include buttons to display the message in the label, clear the text boxes & label & exit.
  9. Create a Web App. To display all the Employee records from the database using SQL source control & bind it to Grid view.
  10. Create a Web Application to Insert 5 records inside the SQL Database table having following fields, Dept\_Id, Dept\_Name, Emp\_Name, Salary. Update the salary for as employee and perform delete operation on one record.

**COURSE DESIGNERS :**

1. Ms. C.D. Balapriya
2. Mrs. P. Praveena



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|                           |   |                   |            |
|---------------------------|---|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 10</b>                        | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>                           | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>V</b>                                  | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMIL52</b>                             | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Mobile Application Development Lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

1. To know about various platforms and tools available for developing mobile applications.
2. To realize the differences between the development of conventional applications and mobile applications and to learn programming skills in J2ME and Android SDK.
3. To study about micro browser based applications to access the Internet using Sun Java Toolkit.

The following experiments to be practiced

1. Survey of Mobile Application Development Tools.
2. Form design for mobile applications.
3. Applications using controls.
4. Graphical and Multimedia applications.
5. Data retrieval applications.
6. Networking applications.
7. Gaming applications.

(Perform the experiments from 2 to 7 in J2ME and Android SDK framework)

8. Micro browser based applications using WAP, WML and WML scripts.

(Perform experiments in 8 using Sun Java Wireless toolkit)

**COURSE DESIGNERS :**

1. Ms. C.D. Balapriya
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|---------------------------|-------------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 12</b>                | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>               | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>VI</b>                     | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMI61</b>                  | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Web Designing with PHP</b> | <b>Credits</b>    | <b>5</b>   |

#### Course Outcomes:

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

1. understand the feature of PHP.
2. connect database with PHP web pages.
3. design the web sites using PHP.

#### Unit I : 16 hours

**Essential PHP:** Enter PHP - Getting PHP - Operators and Flow Control – PHP's Math Operators – Working with the Assignment Operators – Incrementing and Decrementing Values – The PHP String Operators – The Bitwise Operators – The Execution Operator – PHP Operator precedence.

#### Unit II : 15 hours

Using the If statement - The PHP Comparison Operators – The PHP Logical Operators - The else statement - The else if statement, The ternary Operator - switch statement, Using for Loops, Using while Loop, using do...while statement, using the foreach loop, Terminating Loops Early – Skipping Iterations.

#### Unit III : 15 hours

**Strings and Arrays :** The String Functions – Converting to and from Strings – Formatting Text Strings – Building Yourself Some Arrays – Modifying the Data in Arrays – Deleting Array Elements **Creating Functions:** Creating Functions in PHP – Passing Functions Some Data – Passing Arrays to Functions – Passing by Reference –Using Default Arguments – Passing Variable Numbers of Arguments – Returning data from functions – Returning Arrays

#### Unit IV: 14 hours

**Reading Data in web pages:** Setting Up Web Pages to Communicate with PHP – Handling Text Fields, Text Areas, Check Boxes, Radio Buttons, List boxes, Password control, Hidden control, Image Maps, File Uploads, Button. PHP Browser – Handling Power: Using PHP's Server Variables - Using HTTP Headers - Getting the User's Browser Type – Redirecting Browser Type – Dumping a Form's Data All at Once – Handling Form Data with custom arrays – Putting it all in one page - Performing Data Validation – Checking if the User Entered Required Data – Requiring Numbers, Text.

#### Unit V : 15 hours

**Working with Databases:** What is a Database, Some Essential SQL, Creating a MySQL Database, Creating a New Table – Putting Data into the New Database – Accessing the Database in PHP – Updating Databases – Inserting New Data Items into a Database – Deleting Records – Creating New Tables, New Database.

**Text books :**

Steven Holzner, Reprint 2016, The complete Reference PHP, Tata McGraw Hill Education (India) Private Limited.

| Unit | Chapters(pages)                  |
|------|----------------------------------|
| I    | 1 (1 to 37)<br>2 (41 to 54)      |
| II   | 2 (55 to 79)                     |
| III  | 3 (81 to 98)<br>4 (123 to 139)   |
| IV   | 5 (161 to 192)<br>6 (203 to 234) |
| V    | 10 (361 to 392)                  |

**Reference books:**

1. Kevin Tetrol and 'O' Reilly, 2014, Programming PHP, Pearson Education, Prentice Hall of India, New Delhi.
2. Ivan Bayross, Sharanam Shah ,Eleventh Print 2013, PHP 5.1 for beginners, Shrofff publishers.
3. [www.tutorialspoint.com](http://www.tutorialspoint.com)

**Course designers:** 1.Mrs. P. Praveena

2.Ms. C.D. Balapriya

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|---------------------------|------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 13</b>         | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>        | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>VI</b>              | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMI62</b>           | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Cloud Computing</b> | <b>Credits</b>    | <b>4</b>   |

**COURSE OUTCOMES:**

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

1. To understand the basic concept of Cloud Computing and Cloud Computing Architecture.
2. To familiarize themselves with the Virtualization and Cloud Applications.

**UNIT I**

**15 hours**

**Introduction** - Cloud Computing at a Glance – The Vision of Cloud Computing- Defining a Cloud – Cloud Computing Reference Model – Characteristics and Benefits – Historical Developments – Distributed Systems – Virtualization – Web 2.0 – Service Oriented Computing – Utility Oriented Computing - Building Cloud Computing Environments – Application Development – Infrastructure and System Development – Computing Platforms and Technologies – Amazon Web Services – Google AppEngine – Microsoft Azure – Hadoop.

**UNIT II**

**15 hours**

**Principles of Parallel and Distributed Computing** – Eras of Computing – Parallel Vs. Distributed Computing – Elements of Parallel Computing – What is Parallel Processing? – Hardware Architecture for Parallel Processing – Approaches to Parallel Programming – Levels of Parallelism – Elements of Distributed Computing – General Concepts and Definitions – Components of a Distributed System – Architectural Styles for Distributed Computing – Models for InterProcess Communication – Technologies for Distributed Computing – Remote Procedure Call – Distributed Object Frameworks – Service Oriented Computing.

**UNIT III**

**15 hours**

**Virtualization** : Introduction – Characteristics of Virtualized Environments – Taxonomy of Virtualization Techniques – Execution Virtualization – Other Types of Virtualization – Virtualization and Cloud Computing – Pros and Cons of Virtualization – Technology Examples – Xen: Para Virtualization, VMWare: Full Virtualization, Microsoft Hyper-V .

**UNIT IV****15 hours**

**Cloud Computing Architecture** – Introduction – Cloud Reference Model – Architecture – Infrastructure / Hardware as a Service – Platform as a Service – Software as a Service - Types of Clouds – Public Clouds – Private Clouds – Hybrid Clouds – Community Clouds - Economics of the Cloud – Open Challenges – Cloud Definition – Cloud Interoperability and Standards – Scalability and Fault Tolerance - Security, Trust and Privacy – Organizational Aspects.

**UNIT V****15 hours**

**Cloud Applications** : Scientific Applications – Healthcare: ECG Analysis in the Cloud – Biology : Protein Structure Prediction – Geoscience : Satellite Image Processing– Business and Consumer Applications – CRM and ERP – Productivity – Social Networking – Media Applications – Multiplayer Online Gaming.

**TEXT BOOKS:**

Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi :2016. “Mastering Cloud Computing” MC Graw Hill Education(India) Private Ltd

| Units | Chapters   |
|-------|--|
| I     | 1 (1.1, 1.1.1, 1.1.2, 1.1.4, 1.1.5, 1.2, 1.2.1 to 1.2.5, 1.3, 1.3.1, 1.3.2, 1.4, 1.4.1 to 1.4.4) |
| II    | 2 (2.1, 2.2, 2.3, 2.3.1 to 2.3.4, 2.4, 2.4.1 to 2.4.4, 2.5, 2.5.1 to 2.5.3)                      |
| III   | 3 (3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.4, 3.5, 3.6, 3.6.1 to 3.6.3)                                   |
| IV    | 4 (4.1,4.2,4.2.1 to 4.2.4, 4.3,4.3.1 to 4.3.4, 4.4,4.5,4.5.1 to 4.5.5)                           |
| V     | 10 (10.1, 10.1.1, 10.1.2, 10.1.4, 10.2, 10.2.1 to 10.2.5)  |

**REFERENCE BOOKS:**

- 1.Rajkumar Buyya, James Broberg, Andrzej Goscinski:2016. Cloud Computing Principles and Paradigms”, Wiley India Pvt Ltd.
- 2.Toby Velte, Anthony Velte, Robert Elsenpeter :2009. “Cloud Computing - A Practical Approach”, TMH.
- 3.George Reese: 2009. “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice)”, O'Reilly.

**COURSE DESIGNERS:**

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2. Mrs.P.Praveena

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|                           |                                    |                   |            |
|---------------------------|------------------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core 14</b>                     | <b>Int.Marks</b>  | <b>25</b>  |
| <b>Class</b>              | <b>III Year</b>                    | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>VI</b>                          | <b>Max.Marks</b>  | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMI63</b>                       | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Data Warehousing and Mining</b> | <b>Credits</b>    | <b>4</b>   |

**COURSE OUTCOMES:**

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

1. Expose the students to the concepts of Data warehousing Architecture and Implementation
2. Understand Data mining principles and learn to use association rule mining for handling large data and to understand the concept of classification for the retrieval purposes
3. Know the clustering techniques in details for better organization and retrieval of data and to identify Business applications and Trends of Data mining

**UNIT I**

**15 hours**

**Introduction** – So, What is Data Mining – Data Mining - On What Kind of Data? - Data Mining Functionalities -What kind of Patterns can be mined? - **Data Preprocessing:** Why Preprocess the Data – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

**UNIT II**

**15 hours**

**Data Warehouse and OLAP Technoogy: An Overview** : What is a Data Warehouse – Differences between Operational Database Systems and Data Warehouses – A Multidimensional Data Model – Star, Snowflakes and Fact Constellations, Schemas for Multidimensional Databases – OLAP Operations in the Multidimensional Data Model – Data Warehouse Architecture – Data Warehouse Implementation: Indexing OLAP data – Efficient Processing of OLAP Queries.

**UNIT III**

**15 hours**

**Mining Frequent Patterns, Associations and Correlations** – The Apriori Algorithm: Finding Frequent Itemsets using Candidate Generation - Mining Frequent Itemsets without Candidate Generation - Mining Various Kinds of Association Rules - Constraint-Based Association Mining.

**UNIT IV****15 hours**

**Classification and. Prediction** – Preparing the Data for Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back Propagation – Prediction – Accuracy and Error Measures.

**UNIT V****15 hours**

**Cluster Analysis:** What is Cluster Analysis - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods.

**TEXT BOOKS:**

Jiawei Han and Micheline Kamber : 2009. “Data Mining Concepts and Techniques” Second Edition, Elsevier.

| Units | Chapters  |
|-------|---|
| I     | 1(1.2, 1.3, 1.4), 2(2.1, 2.3, 2.4, 2.5, 2.6)            |
| II    | 3(3.1, 3.1.1, 3.2, 3.2.2, 3.2.6,3.3, 3.4, 3.4.2, 3.4.3) |
| III   | 5(5.2.1, 5.2.4, 5.3, 5.5)                               |
| IV    | 6(6.1, 6.2.1, 6.3 to 6.6,6.11,6.12)                     |
| V     | 7(7.1 to 7.8)   |

**REFERENCE BOOKS:**

- 1.G. K. Gupta: 2006. “Introduction to Data Mining with Case Studies”, Easter Economy Edition, Prentice Hall of India.
- 2.BERSON, ALEX & SMITH, STEPHEN J : 2012. “Data Warehousing, Data Mining, and OLAP”, TMH Pub. Co. Ltd, New Delhi.
3. K.P. Soman, Shyam Diwakar and V. Ajay: 2006. “Insight into Data mining Theory and Practice”, Easter Economy Edition, Prentice Hall of India.

**COURSE DESIGNERS:**

- 1.Ms. C. D. Balapriya
- 2.Mrs. P.Praveena

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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|                           |                                   |                   |            |
|---------------------------|-----------------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 11</b>                | <b>Int. Marks</b> | <b>40</b>  |
| <b>Class</b>              | <b>III Year</b>                   | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>VI</b>                         | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL61</b>                     | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Web designing with PHP lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

1. Understand the feature of PHP.
  2. Connect database with PHP web pages.
  3. Design web sites using PHP.
- 
1. Write a program to check & print whether a given number is even or odd.
  2. Write a program to find the largest among 3 numbers using ternary operation.
  3. Write a program to print the sum of digits of a given number (using while loop)
  4. Write a program to print Fibonacci series.
  5. Write a program to enter number till the user wants. At the end it should display count of positive, negative and zeros entered. (using do – while loop)
  6. Write a function which finds the Number times each word Occurs on the given input sentence.
  7. Write a Menu-Driver program to implement a calculator which performs only addition, subtraction, multiplication and division. (Using switch case)
  8. Write a function to swap two strings using call by value & call by reference.
  9. Write a program to create a file & write contents to it and display it. Then append some data to it.
  10. Create a login form which verifies user name and password to a particular strings (User name: Thiagarajar, password: art&science) if they are correct, it should be redirected to welcome. HTML page or it should be redirected to sorry HTML Page.
  11. Write a program to arrange the given number in ascending order (Using array)
  12. Write a program to perform matrix addition
  13. Create form which gets inputs from user and redirect the user to another page which contains content based on the user input.
  14. Create form which accepts a number from 2 to 1000 and check whether it is Armstrong or not.

**COURSE DESIGNERS :**

1. Ms. C. D. Balapriya
2. Mrs. M. Hemalatha



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|                           |                       |                   |            |
|---------------------------|-----------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Lab 12</b>    | <b>Int. Marks</b> | <b>40</b>  |
| <b>Class</b>              | <b>III Year</b>       | <b>Ext. Marks</b> | <b>60</b>  |
| <b>Semester</b>           | <b>VI</b>             | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMIL62</b>         | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Networking lab</b> | <b>Credits</b>    | <b>2</b>   |

**Course Outcomes:**

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

1. Learn about network design and troubleshooting
  2. Understanding the modeling and evaluation of computer networks..
  3. To evaluate their design approaches and expected network performance using simulation.
1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
  2. Study of Network Devices in Detail.
  3. Study of network IP.
  4. Connect the computers in Local Area Network.
  5. Study of basic network command and Network configuration commands.
  6. Configure a Network topology using packet tracer software.
  7. Configure a Network topology using packet tracer software.
  8. Configure a Network using Distance Vector Routing protocol.

**COURSE DESIGNERS :**

1. Mr. S. Kumarappan.
2. Mrs. P. Praveena

# Core Elective



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|                           |                         |                    |                |
|---------------------------|-------------------------|--------------------|----------------|
| <b>Course</b>             | <b>Core Elective</b>    | <b>Int. Marks</b>  | <b>25</b>      |
| <b>Class</b>              | <b>II</b>               | <b>Ext. Marks</b>  | <b>75</b>      |
| <b>Semester</b>           | <b>III/IV</b>           | <b>Max. Marks</b>  | <b>100</b>     |
| <b>Sub. Code</b>          | <b>SMME31/SMME41(A)</b> | <b>Hours/ Week</b> | <b>5</b>       |
| <b>Title of the Paper</b> | <b>Microprocessor</b>   | <b>and</b>         | <b>Credits</b> |
|                           | <b>Assembly</b>         | <b>Language</b>    | <b>5</b>       |
|                           | <b>Programming</b>      |                    |                |

**Course Outcomes:**

- 1.To analyze, specify, design write and test assembly language program of moderate complexity.
- 2.To able to characterize and predict the effects of the bus on the overall performance of a system.

**Unit - I: 15 hours**

**System Design Using Microprocessor :** Introduction - System Design – Feasibility study- Random logic vs. microprocessor- System Specification – Initial Design – Hardware Design – Software Design- Test and Debug – Integration - Documentation -Development Tools **What a Microprocessor is:** Computer and its Organization – Programming System – What is microprocessor ? – Address Bus, Data Bus and Control Bus – Tristate Bus - Clock Generation – Connecting Microprocessor to I/O Devices – Data Transfer Schemes – Architectural Advancements of Microprocessors – Evolution of Microprocessors .

**Unit - II: 15 hours**

**Intel 8085 Microprocessor-Hardware Architecture:** Introduction - Hardware Architecture –  
The 8085 Pin out – Instruction Execution – Direct Memory Access Timing Diagram – External Interrupts Timing Diagram - **Intel 8085 Microprocessor- Instruction Set and Programming:** Introduction  
Program Status Word – Operand Types – Instructions Format – Addressing Modes– Instruction Set –  
Arithmetic Instructions – Logical Instructions – Branch Instructions – Stack-I/O and Machine Control Instructions.

### UNIT III

15 hours

**Intel 8086 –Hardware Architecture :**Introduction – Architecture-Pin Description- External Memory Addressing – Bus Cycles – Some Important Companion Chips – Maximum Mode Bus Cycle – Intel 8086 System Configurations – Memory Interfacing – Minimum/Maximum Mode System Configuration – Interrupt Processing – Direct Memory Access – Halt State – Wait for Test State – Comparison Between the 8086 and the 8088 – Compatibility Between the 8086 and the 8088, the 80186 and 80826 Processors .

### Unit –IV :

15 hours

**Fundamentals of `Assembly language:**Requirements for coding in Assembly language:Introduction-Assembly language features- Conventional segment directives-Simplified segment directives – Initializing for protected mode-Defining types of data .**Assembling , linking and executing programs:** Introduction-Preparing a program for assembling and execution- Two-pass assembler- Linking an object program- Executing a program-The cross- reference Linking- Error Diagnostics- The Assembler Location Counter-Writing . com programs.

### Unit V

15 hours

**Symbolic Instruction and Addressing:** Introduction-The symbolic Instruction set-An Overview –Data transfer Instructions-Basic arithmetic Instructions – Repetitive move instructions- The Int Instruction- Addressing modes .**Program Logic and control :** Introduction- Short, Near, and Far Addresses-The JMP Instruction- The LOOP Instruction— The Flags Register- The CMP Instruction-Conditional Jump Instructions –Calling procedures-The effect of program execution on the stack- Boolean operations-Shifting Bits-Rotating Bits- Organizing a Program.

### TEXTBOOKS

1. Krishna Kant, 2016, Microprocessors and Microcontrollers, Second Edition by PHI Learning Private Ltd., New Delhi.
2. Peter Abel, 2015, IBM PC Assembly Language And Programming” Fifth Edition by PEARSON, New Delhi.

| UNIT | CHAPTERS/SECTIONS               |
|------|---------------------------------|
| I    | BOOK1-1(1.1- 1.3) , 2(2.1-2.11) |
| II   | Book1-3(3.1- 3.6), 4(4.1-4.6.6) |
| III  | Book1-5(5.1-5.17)               |
| IV   | Book2- 4(page 51-65), 5(74-86)  |
| V    | Book2-6(page92-100), 7(109-133) |

### REFERENCE BOOKS

1. Ramesh Gaonkar, 2015, Microprocessor Architecture programming and applications with the 8085, Sixth edition, PenRam International Publishing (India) Pvt .Ltd, Mumbai.
2. Nagoor Kani.A,2016, Microprocessor And Microcontroller,Mc –Graw Hill Education(India) Private Limited, New Delhi.

### Course designers:

1. Mrs.M.Hemalatha
2. Mrs.P.Praveena

# THIAGARAJAR COLLEGE, MADURAI- 9

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## DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those who join in 2017 and after)

|                    |                    |            |       |
|--------------------|--------------------|------------|-------|
| Course             | : Core Elective    | Int.Marks  | : 25  |
| Class              | II Year            | Ext. Marks | : 75  |
| Semester           | : III/IV           | Max.Marks  | : 100 |
| Sub.Code           | : SMME31/SMME41(B) | Hours/Week | : 5   |
| Title of the Paper | : Soft Computing   | Credits    | 5     |

### Course Outcomes:

1. Expose the students to the concepts of Neural Networks and Implementation
2. Understand Adaptive Resonance Theory and Algorithm. To learn their uses and purposes
3. Know the Concept of Fuzzy Set, Reasoning and Clustering.

### Unit I:

16 hours

**Fundamentals of Neural Networks:** Basic Concepts of Neural Network-Human Brain-Model of an Artificial Neuron - Neural Network Architectures-Characteristics of Neural Networks-Learning Methods. **Back propagation Networks:** Architecture of Back propagation Network-The Perceptron Model - The Solution – Single Layer Artificial Neural Network – Model for Multilayer Perceptron-Back propagation Learning-Input Layer Computation-Hidden Layer Computation-Output Layer Computation-Calculation of Error-Training of Neural Network – Method of Steepest Descent – Effect of Learning Rate 'n'- Adding a Momentum Term - Back propagation Algorithm .

### Unit II:

14 hours

**Adaptive Resonance Theory:** Introduction – Cluster Structure-Vector Quantization-Classical ART Networks-Simplified ART Architecture- ART1- Architecture of ART1-Special Features of ART1 Models-ART1 Algorithm- ART2- Architecture of ART2- ART2 Algorithm –Application-Character Recognition Using ART1-Classification of Soil – Prediction of Load from Yield Line Patterns of Elastic-Plastic Clamped Square Plate-Chinese Character Recognition-Sensitivities of Ordering Data.

### Unit III:

15 hours

**Introduction to Generic Algorithms:** Working Cycle of a Generic Algorithm-Binary –Coded GA-GA-Parameters Setting- Constraints Handling in GA-Advantages and disadvantages of Generic Algorithms-Combination of local and Global Optimum Search Algorithms.

### Unit IV:

16 hours

**Introduction to Fuzzy Sets:** Crisp Sets-Notations Used in Set Theory-Crisp Set Operations-Properties of Crisp Set-Fuzzy Set-Representation of a Fuzzy Set-Difference Between Crisp Set and Fuzzy Set-A Few Definitions in Fuzzy Sets-Measures of Fuzziness and Inaccuracy of Fuzzy set.

**Unit V:****14 hours**

**Fuzzy Reasoning and Clustering:** Introduction-Fuzzy Logic controller-Two Major Forms of Fuzzy Logic controller-Hierarchical Fuzzy Logic Controller-Sensitivity Analysis-Advantages and Disadvantages of Fuzzy Logic Controller-Fuzzy clustering-Fuzzy C-Means clustering-Entropy-based Fuzzy Clustering

**TEXT BOOKS**

1. Rajasekaran. S and Vijayalakshmi Pai, 2011, “Neural Networks, Fuzzy Logic and Genetic Algorithms Synthesis and Applications”, PHI Learning Private Limited, New Delhi.
2. Dilip K. Pratihar, 2015, ”Soft Computing, Fundamentals and Applications”, Narosa Publishing House, Chennai.

| Unit | Chapters/Section              |
|------|-------------------------------|
| I    | Book 1: 2(2.1-2.6),3(3.1-3.2) |
| II   | Book 1: 5                     |
| III  | Book 2: 3                     |
| IV   | Book 2: 7                     |
| V    | Book 2: 8                     |

**REFERENCE BOOKS**

1. J.S.R.Jang, C.T. Sun and E.Mizutani, 2004, “Neuro-Fuzzy and Soft Computing”, PHI / Pearson Education.
2. George J. Klir, Ute St. Clair, Bo Yuan, 1997, “Fuzzy Set Theory: Foundations and Applications” Prentice Hall.
3. David E. Goldberg, 2013, “Genetic Algorithm in Search Optimization and Machine Learning” Pearson Education India.

**Course designers**

1. Mr. S. Kumarappan.
2. Mrs. M.Hemalatha

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|                           |                         |                   |              |
|---------------------------|-------------------------|-------------------|--------------|
| <b>Course</b>             | <b>Core Elective</b>    | <b>Int.Marks</b>  | <b>: 25</b>  |
| <b>Class</b>              | <b>II</b>               | <b>Ext. Marks</b> | <b>: 75</b>  |
| <b>Semester</b>           | <b>III/IV</b>           | <b>Max.Marks</b>  | <b>: 100</b> |
| <b>Sub.Code</b>           | <b>SMME31/SMME41(C)</b> | <b>Hours/Week</b> | <b>: 5</b>   |
| <b>Title of the Paper</b> | <b>E-Commerce</b>       | <b>Credits</b>    | <b>5</b>     |

**Course Outcomes:**

- To understand the characteristics and principles of E-Commerce
- To understand the major opportunities of E-Commerce.
- To understand the limitations, issues and risks in E-Commerce .

**Unit I:** **15 hours**

**Fundamentals of e-Commerce:** e-Commerce and its types - Driving forces behind e-Commerce – Impacts - benefits and limitations of e-Commerce - Consumer behavior in e-Commerce - Electronic Data Interchange(EDI) - Supply Chain Management; Just-in-time - Procurement Management and Customer Relationship Management.

**Unit II:** **15 hours**

**Network Infrastructure for E-commerce:** Access Equipment - Access Media and Network Infrastructure for e-Commerce - Internet, Internet and Extranet

**Unit III:** **15 hours**

**Web Security:** Security threats on the Internet and their impact - Security services - Security mechanisms – Cryptography - Firewalls

**Unit IV:** **15 hours**

**Electronic Payments:** Electronic Funds Transfer and types of Electronic payments – Electronic payment mechanisms such as credit cards - smart cards - electronic cash and electronic checks.

**Unit V:** **15 hours**

**Mobile Commerce:** Mobile computing and wireless - Wireless technologies and Wireless Application Protocol (WAP) and WAP gateway



### **TEXT BOOKS**

Mamta Bhusry, Edition: First, 2016, E-Commerce, Published by Firewall/Laxmi Publications (P) Ltd., New Delhi,

| <b>Unit</b> | <b>Chapters/Section</b> |
|-------------|-------------------------|
| I           | 1,2,3                   |
| II          | 4,5.                    |
| III         | 6,7,8.                  |
| IV          | 9.                      |
| V           | 10,11.                  |

### **REFERENCE BOOKS**

1. P. T. Joseph, S. J., 2008, E-Commerce, Prentice Hall of India Pvt, New Delhi.
2. Pete Loshin, Jhon Vacca, 2004, Electronic Commerce, Laxmi Publications Pvt. Ltd, New Delhi

### **Course designers**

1. Mr. S. Kumarappan.
2. Ms.C.D.Balapriya

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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|                           |                                    |                   |            |
|---------------------------|------------------------------------|-------------------|------------|
| <b>Course</b>             | <b>Core Elective</b>               | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>II</b>                          | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>III/IV</b>                      | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub.Code</b>           | <b>SMME31/SMME41(D)</b>            | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Software Project Management</b> | <b>Credits</b>    | <b>5</b>   |

**COURSE OUTCOMES:**

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

1. Know of how to do project planning for the software process.
2. Learn the cost estimation techniques during the analysis of the project.
3. Understand the quality concepts for ensuring the functionality of the software

**UNIT I**

**15 hours**

**Introduction to Software Project Management:** Introduction. **An Overview of Project Planning:** Select Project, Identifying Project Scope and Objectives, Identify Project Infrastructure, Identify Project Products and Activities - Estimate efforts for Each Activity, Identify Activity Risks, and Allocate Resources.

**UNIT II**

**15 hours**

**Project Evaluation and Programme Management:** Project Portfolio Management, Evaluation of Individual Projects, Cost-benefit Evaluation Techniques, Risk Evaluation. **Selection of an Appropriate Project approach:** Choosing Methodologies and Technologies, Choice of process models, The Waterfall Model, The Spiral Model, Software Prototyping.

**UNIT III**

**15 hours**

**Software Effort Estimation:** Problems with over and under estimations, Basis of software Estimation, Software Estimation Techniques, Expert Judgment, Estimating by analogy. **Activity Planning:** Project Schedules, Projects and Activities, Sequencing and Scheduling Activities, Networks Planning Models, Formulating a network model.

**UNIT IV**

**15 hours**

**Risk Management:** Introduction, Risk, Categories of Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management. **Resource Allocation:** Scheduling resources, Creating Critical Paths, Cost Schedules. **Monitoring and Control:** Creating Framework, Cost Monitoring, Prioritizing Monitoring.

**Software Quality:** Defining Software Quality, ISO9126, Product and Process Metrics, Quality Management Systems, Process Capability Models, Testing, Software Reliability.

**TEXT BOOKS:**

Bob Hughes & Mike Cotterell : 2012. “Software Project Management”, Tata McGraw- Hill Publications, Fifth Edition.

| Units | Chapters/Sections  |
|-------|--|
| I     | 1(1.1), 3(3.1,3.2,3.3,3.4,3.6,3.7,3.8,3.9)                 |
| II    | 2(2.3,2.4,2.5,2.6), 4(4.3,4.5,4.7,4.8,4.9)                 |
| III   | 5(5.3,5.4,5.5,5.8,5.9),6(6.4,6.5,6.6,6.7,6.8)              |
| IV    | 7(7.1 to 7.3,7.5 to 7.8), 8(8.4, 8.5, 8.9), 9(9.2,9.7,9.9) |
| V     | 13(13.4,13.5,13.6,13.8,13.9,13.11,13.12)                   |

**REFERENCE BOOKS:**

- 1.Richard H.Thayer:2008. “Software Engineering Project Management,”: IEEE Computer Society
- 2.Futrel :2008. “Quality Software Project Management”, Pearson Education India.
3. S. A. Kelkar : 2013. “Software Project Management” PHI, New Delhi, Third Edition.

**COURSE DESIGNERS:**

1. Ms. C.D. Balapriya
2. Mrs. P. Praveena

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|                           |   |                   |            |
|---------------------------|---|-------------------|------------|
| <b>Course</b>             | <b>Core Elective</b>                    | <b>Int. Marks</b> | <b>25</b>  |
| <b>Class</b>              | <b>II</b>                               | <b>Ext. Marks</b> | <b>75</b>  |
| <b>Semester</b>           | <b>III/IV</b>                           | <b>Max. Marks</b> | <b>100</b> |
| <b>Sub. Code</b>          | <b>SMME31/SMME41(E)</b>                 | <b>Hours/Week</b> | <b>5</b>   |
| <b>Title of the Paper</b> | <b>Principles of Data Communication</b> | <b>Credits</b>    | <b>5</b>   |

**Course Outcomes:**

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

1. understand the basics of data communication.
2. become familiarize with the Information theory and coding techniques.

**Unit I :** **14 hours**

**Digital communication overview:** Electronic Communications – Sources and sinks of information – Digital communication equipment. **Information theory, source coding and encryption:** Introduction – Information and entropy – Conditional entropy and redundancy – Information loss and entropy due to noise – Source coding – Variable length coding.

**Unit II:** **18 hours**

**Data encryption:** Authentication – Integrity – Digital Signature. **Error Control coding:** Introduction – Hamming distance and codeword weight – (n,k) block codes – Probability of error in n –digit codeword – Linear group codes, Nearest neighbor decoding of block codes – Syndrome decoding – Cyclic codes – Encoding of convolutional codes – Viterbi decoding of convolutional codes – Practical coder.

**Unit III:** **15 hours**

**Video transmission and storage:** Introduction – Color representation – High definition TV – Digital Video – Video data compression – Compression standards – Digital Video broadcast – Packet video – Other multimedia services.

**Unit IV:** **16 hours**

**LZ78 Compression:** Can LZ77 Improve? – Enter LZ78 – An Effective Variant – Decompression: The Catch – LZW Implementation – Tree Maintenance and Navigation. **Speech Compression:** Digital Audio Concepts – Lossless Compression of Sound Problems – Companding - Other techniques

**Unit V:** **12 hours**

**Lossy Graphics Compression:** Enter Compression – A Standard That Works: JPEG – Why Bother? – Implementing the DCT – Continued Improvements – Coding.

**Text Books:**

1. Lan glover, Peter M. Grant , 3<sup>rd</sup> Edition,2010, Digital Communications, Pearson Education, Prentice Hall of India, New Delhi
2. Mark Nelson, Jean – Loup Gaily,2<sup>nd</sup> Edition, The Data compression Book, M & T Publications, New Delhi.

| Unit | Chapters                          |
|------|-----------------------------------|
| I    | Book 1:1.1,1.2,1.3, 9.1 to 9.7    |
| II   | Book 1:9.8 to 9.11, 10.1 to 10.11 |
| III  | Book 1:16.1,16.2, 16.4 to 16.10   |
| IV   | Book 2 : 9,10                     |
| V    | Book 2 : 11                       |

**Reference books:**

1. William Stallings, 2002, Data & Computer Communication, 6<sup>th</sup> Edition, Pearson Education, Prentice Hall of India, New Delhi,
2. Prakesh C.Gupta, 2002, Data Communications, Prentice Hall of India, New Delhi.
3. Herbert Taub & D.L. Schilling, 2002, Principles of communication Systems, Tata Mc Graw Hill, New Delhi.
4. [www.cs.utexas.edu](http://www.cs.utexas.edu)

**Course designers :**

- 1.Mrs. P. Praveena
2. C.D. Bala Priya

**THIAGARAJAR COLLEGE, MADURAI- 9**  
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|                           |                           |                   |              |
|---------------------------|---------------------------|-------------------|--------------|
| <b>Course</b>             | <b>: Core Elective</b>    | <b>Int.Marks</b>  | <b>: 25</b>  |
| <b>Class</b>              | <b>: II Year</b>          | <b>Ext. Marks</b> | <b>: 75</b>  |
| <b>Semester</b>           | <b>: III/IV</b>           | <b>Max.Marks</b>  | <b>: 100</b> |
| <b>Sub.Code</b>           | <b>: SMME31/SMME41(F)</b> | <b>Hours/Week</b> | <b>: 5</b>   |
| <b>Title of the Paper</b> | <b>Computer Forensics</b> | <b>Credits</b>    | <b>: 5</b>   |

**Course Outcomes:**

- To understand Computer Forensics and Computing Investigations,
- To understand Enforcement Agency Investigations, Corporate Investigations, forensically sound principles and practices related to digital evidence collection, management, and handling.

**Unit I: 15 hours**

**Computer Forensics Fundamentals:** Introduction to Computer Forensics -Use of Computer Forensics in Law Enforcement -Computer Forensics Assistance to Human Resources-Employment Proceedings -Computer Forensics Services -Benefits of Professional Forensics Methodology -Steps Taken by Computer Forensics Specialists -Who Can Use Computer Forensic Evidence?.**Types of Computer Forensics Technology:** Types of Computer Forensics Technology - Types of Military Computer Forensic Technology -Types of Law Enforcement: Computer Forensic Technology -Types of Business Computer Forensic Technology -Specialized Forensics Techniques -Hidden Data and How to Find It -Spyware and Adware -Encryption Methods and Vulnerabilities -Protecting Data from Being Compromised -Internet Tracing Methods -Security and Wireless Technologies -Avoiding Pitfalls with Firewalls -Biometric Security Systems.

**Unit II: 13 hours**

**Types of Computer Forensics Systems:** Internet Security Systems -Intrusion Detection Systems -Firewall Security Systems -Storage Area Network Security Systems - Network Disaster Recovery Systems -Public Key Infrastructure Systems -Wireless Network Security Systems -Satellite Encryption Security Systems -Instant Messaging (IM) Security Systems -Net Privacy Systems -Identity Management Security Systems -Identity Theft - Biometric Security Systems -Homeland Security Systems.

**Unit III: 17 hours**

**Computer Forensics Evidence and Capture-Data Recovery:** Data Recovery Defined-Data Backup and Recovery -The Role of Backup in Data Recovery -The Data-Recovery Solution -Hiding and Recovering Hidden Data. **Evidence Collection and Data Seizure:**Why Collect Evidence? -Collection Options -Obstacles -Types of Evidence -The Rules of Evidence -Volatile Evidence -General Procedure -Collection and Archiving - Methods of Collection -Artifacts -Collection Steps -Controlling Contamination: The Chain of Custody -Reconstructing the Attack.

**Unit IV:****14 hours**

**Duplication and Preservation of Digital Evidence:**Preserving the Digital Crime Scene-Computer Evidence Processing Steps -Legal Aspects of Collecting and Preserving Computer Forensic Evidence -**Computer Image Verification and Authentication:**Special Needs of Evidential Authentication -Practical Considerations –Practical Implementation.

**Unit V:****16 hours**

**Computer Forensics Analysis: Discovery of Electronic Evidence:** Electronic Document Discovery: A Powerful New Litigation Tool- **Identification of Data:** Timekeeping -Forensic Identification and Analysis of Technical Surveillance Devices. **Reconstructing Past Events:** How to Become a Digital Detective -Useable File Formats - Unusable File Formats -Converting Files. **Networks:** Network Forensics Scenario -A Technical Approach -Destruction of Email -Damaging Computer Evidence -Tools Needed for Intrusion Response to the Destruction of Data -System Testing.

**TEXT BOOKS:**

John R. Vacca, 2005, Computer Forensics: Computer Crime Scene Investigation, Second Edition, Charles River Media, Inc. Boston, Massachusetts.

| <b>Unit</b> | <b>Chapters/Section</b> |
|-------------|-------------------------|
| I           | 1,2.                    |
| II          | 3.                      |
| III         | 5,6.                    |
| IV          | 7,8.                    |
| V           | 9,10,11,12.             |

**REFERENCE BOOKS**

1. Nelson, Phillips, Enfinger, Steuart, 2008 ,“Computer Forensics and Investigations”, Cengage Learning, India Edition, 2008.
2. Richard E.Smith, 2008, “Internet Cryptography”, 3rd Edition Pearson Education.
3. Marjie T.Britz, 2013 ,“Computer Forensics and Cyber Crime”: An Introduction”, 3rd Edition, Prentice Hall.

**Course designers**

1. Mr. S. Kumarappan.
2. Mrs. M. Hemalatha.

# SEC Papers





**THIAGARAJAR COLLEGE, MADURAI- 9**  
**(Re-Accredited with ‘A’ Grade by NAAC)**  
**DEPARTMENT OF COMPUTER APPLICATION &**  
**INFORMATION TECHNOLOGY**  
**(For those who join in 2017 and after)**

|                           |                             |                    |           |
|---------------------------|-----------------------------|--------------------|-----------|
| <b>Course</b>             | <b>SEC</b>                  | <b>Int. Marks</b>  | <b>15</b> |
| <b>Class</b>              | <b>II/III</b>               | <b>Ext. Marks</b>  | <b>35</b> |
| <b>Semester</b>           | <b>IV/VI</b>                | <b>Max. Marks</b>  | <b>50</b> |
| <b>Sub. Code</b>          | <b>SMMSEC41/SMMSEC61(A)</b> | <b>Hours/ Week</b> | <b>2</b>  |
| <b>Title of the Paper</b> | <b>Robotics</b>             | <b>Credits</b>     | <b>2</b>  |

**Course Outcomes:**

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

1. develop the ability to analyze and design the motion for articulated systems.
2. develop an ability to use software tools for analysis and design of robotic system.

**UNIT I: 15hours**

**Introduction**-Brief history-Types of robots-Technology of robots-Basic principles in robotics- Notation-symbolic computation and numerical analysis.**Mathematical Representation of Robots:**Introduction-Position and orientation of a Rigid body-Some properties of rotation matrices-Successive rotations of a rigid body-Representation of orientation by three angles-Other representation of orientation-Transformation between coordinate systems-Homogeneous transformation-Properties of AB[T]-Representation of joints-rotary joint-prismatic joint-Screw joint-Cylindrical joint-Spherical joint-Spherical joint pair-Other joints-Representation of Links Using Denavit-Hartenberg Parameters-Link parameters of intermediate links-First and last links-Summary of link parameters-Link Transformation Matrices- Homogeneous coordinates, Lines, Screws, and Twists.

**UNIT II: 15 hours**

**Kinematics of Serial Manipulators:**Introduction-Degrees of Freedom of a Manipulator- Inverse Kinematics of serial Manipulators – Manipulator with non-intersecting Wrist .**Kinematics of Parallel Manipulators:** Introduction – Degrees of freedom – Loop-closure constraint equations – Direct Kinematics of parallel manipulators-mobility of parallel Manipulators- Inverse Kinematics of parallel manipulators.

**Text Book:**

**Ashitava Ghosal**, Reprint 2012,**Robotics Fundamental concepts and Analysis**, Seventh impression,Published by Oxford University press NewDelhi.

| UNIT | CHAPTER/SECTIONS                       |
|------|--|
| I    | 1(1.1 to 1.7), 2( 2.1 to 2.8)          |
| II   | 3(3.1 to 3.5),4(4.1 to 4.4,4.6 to 4.7) |

**Reference Book:**

- 1.David Cook,2009,Robot Building For Beginners,Second Edition.
- 2.[www.electronicteacher.com/robotics/robotics-tutorial/robotics-beginners](http://www.electronicteacher.com/robotics/robotics-tutorial/robotics-beginners)
- 3.[www.instructables.com/simple-robotics-for-beginners](http://www.instructables.com/simple-robotics-for-beginners)

Course designer :

1. M. Hemalatha
2. S. Kumarappan

# THIAGARAJAR COLLEGE, MADURAI- 9

(Re-Accredited with 'A' Grade by NAAC)

## DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those who join in 2017 and after)

|                    |                          |            |       |
|--------------------|--------------------------|------------|-------|
| Course             | : SEC                    | Int.Marks  | : 40  |
| Class              | : II/III Year            | Ext. Marks | : 60  |
| Semester           | : IV/VI                  | Max.Marks  | : 100 |
| Sub.Code           | : SMMSEC41/SMMSEC61(B)   | Hours/Week | : 4   |
| Title of the Paper | : Desktop Publishing Lab | Credits    | 2     |

### Course Outcomes:

- Students will gain a working knowledge of Photoshop and develop their skills in editing and altering photographs for through a basic understanding of the tool bar, layers, and the adjustments panel.
- On completion of the Lab students should be able to: Design and produce print material manually using Corel Draw.
- Students should be able to able to creating and viewing “multimedia rich” content on the web

### PHOTOSHOP

#### Topics Include:

- Mastering the effects of the clone and healing brush tools
- Understanding and working with Layers and the Adjustments Panel
- Understanding the basics of Masking
- Transforming and maximizing Smart Objects
- Employing Smart Filters to create interesting effects
- Color correction
- Working with text and vector shapes

### COREL DRAW

- Design a visiting card
- Design a postcard
- Design a poster
- Design a brochure
- Design a magazine (at least 16 pages)
- Prepare a tabloid
- Prepare a front page of a newspaper

### FLASH

- Create an animation to represent the growing moon.
- Create an animation to indicate a ball bouncing on steps.
- Movement of a cloud
- Display the background given (filename: tulip.jpg) through your name.
- Create an animation with the following features. **Welcome**
  - \* Letters should appear one by one
  - \* Fill the color of the text should change to a different color after the display of the full word

### Course designers

1. Mr. S. Kumarappan.
2. Mrs. M. Hema Latha

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**DEPARTMENT OF COMPUTER APPLICATION &**  
**INFORMATION TECHNOLOGY**  
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|                           |                             |                   |           |
|---------------------------|-----------------------------|-------------------|-----------|
| <b>Course</b>             | <b>SEC</b>                  | <b>Int.Marks</b>  | <b>15</b> |
| <b>Class</b>              | <b>II/III Year</b>          | <b>Ext. Marks</b> | <b>35</b> |
| <b>Semester</b>           | <b>IV/VI</b>                | <b>Max.Marks</b>  | <b>50</b> |
| <b>Sub.Code</b>           | <b>SMMSEC41/SMMSEC61(C)</b> | <b>Hours/Week</b> | <b>2</b>  |
| <b>Title of the Paper</b> | <b>Embedded Systems</b>     | <b>Credits</b>    | <b>2</b>  |

**COURSE OUTCOMES:**

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

1. Learn the basic concepts of Embedded Systems and 8051 Microcontroller.
2. Gain knowledge about the basics of RTOS and to learn the method of designing Real Time Systems.

**UNIT I**

**15 hours**

**Introduction to Embedded Systems:** Embedded Systems- Processor Embedded Into A System-Embedded Hardware Units and Devices in a System – Embedded Software in a System and an Overview of Programming Languages- Introduction to Embedded System design - Introduction to Embedded System Architecture - Introduction to Embedded System Model - Classification of Embedded Systems – Examples of the Embedded Systems. **8051:** Introduction to Microcontrollers and Microprocessors - Examples of a Microcontroller – 8051 Architecture.

**UNIT II**

**15 hours**

**Real – Time Operating System I:** Multiple Processes in an Application – Multiple Threads in an Application - Inter Process Communication and Synchronization – Signals – Queues and Mailboxes – Pipe and Socket functions. **Real – Time Operating System II:** Operating System Services – Process Management - Timer Function –Event Function – Memory Management – Device, Files And I/O Subsystem Management– Basic Design using a RTOS.

**TEXT BOOKS:**

Rajkamal, 2015. “Embedded Systems Architecture, Programming And Design” Tata McGraw-Hill Education Private Ltd, Third Edition.

| Units | Chapters  |
|-------|---|
| I     | 1 (1.1 to 1.8, 1.10), 3 (3.1, 3.3)                          |
| II    | 9 (9.1, 9.2, 9.7, 9.8, 9.12, 9.13), 10 (10.1 to 10.6, 10.9) |

**REFERENCE BOOKS:**

- 1.Marilyn Wolf : 2012. “Computers As A Components” ,Third Edition, Morgan Kaufman Series.
- 2.A.P.Godse & A.O.Mulani : 2009. ”Embedded Systems” ,Third Edition, Technical publications
3. B.Kanth Rao, 2011: “Embedded Systems” , PHI Learning Private Limited.

**. COURSE DESIGNERS:**

1. Ms. C.D. Balapriya
- 2.Mrs. P.Praveena

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|                           |                             |                    |           |
|---------------------------|-----------------------------|--------------------|-----------|
| <b>Course</b>             | <b>SEC</b>                  | <b>Int. Marks</b>  | <b>15</b> |
| <b>Class</b>              | <b>II/III</b>               | <b>Ext. Marks</b>  | <b>35</b> |
| <b>Semester</b>           | <b>IV/VI</b>                | <b>Max. Marks</b>  | <b>50</b> |
| <b>Sub. Code</b>          | <b>SMMSEC41/SMMSEC61(D)</b> | <b>Hours/ Week</b> | <b>2</b>  |
| <b>Title of the Paper</b> | <b>Python Programming</b>   | <b>Credits</b>     | <b>2</b>  |

**Course Outcomes:**

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

1. Understand the various elements of Python.
2. Able to create simple python application.

**Unit-I:**

**15 hours**

**The way of the program-** Variables, expressions and statements-Functions-Case study: interface design: Turtle World -Simple repetition- Exercises- Encapsulation – Generalization-Interface design- Refactoring - A development plan -docstring -Conditionals and recursion.

**Unit-II:**

**15 hours**

**Fruitful functions** – Iteration-Strings-Lists: A list is a sequence -Lists are mutable- Traversing a list - List operations –List Methods-List arguments-Dictionaries: Dictionary as a set of counters - Looping and dictionaries-Global Variable.

**Text Books:**

1. Allen Downey, 2012, Think Python, Green Tea Press

| <b>UNIT</b> | <b>Chapter /Sections</b> |
|-------------|--------------------------|
| I           | 1,2,3,4,5                |
| II          | 6,7,8,10                 |

**Reference Books:**

1. Paul Gries , Jennifer Campbell, Jason Montojo, 2014, Practical Programming: An Introduction to Computer Science Using Python, Pragmatic Bookshelf.
2. Gutttag john V ,2014, Introduction To Computation And Programming Using Python ,PHI Learning Private Limited New Delhi.

**Course Designer:**

1. Mrs. M. Hemalatha
2. Mr. S. Kumarappan

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|                           |                               |                   |             |
|---------------------------|-------------------------------|-------------------|-------------|
| <b>Course</b>             | <b>: SEC</b>                  | <b>Int.Marks</b>  | <b>: 15</b> |
| <b>Class</b>              | <b>: II/III Year</b>          | <b>Ext. Marks</b> | <b>: 35</b> |
| <b>Semester</b>           | <b>: V/VI</b>                 | <b>Max.Marks</b>  | <b>: 50</b> |
| <b>Sub.Code</b>           | <b>: SMMSEC41/SMMSEC61(E)</b> | <b>Hours/Week</b> | <b>: 2</b>  |
| <b>Title of the Paper</b> | <b>: Logical Reasoning</b>    | <b>Credits</b>    | <b>2</b>    |

**Course Outcomes:**

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

1. Solve various logical reasoning problems.
2. Clear competitive examinations with high score.
3. Improve their verbal and non-verbal ability.

**UNIT I: SERIES AND CODING**

**15 Hours**

Series compilation – Number series- Alpha numeric series- Alphabetic series- Patterns- analog – Direct and simple analogs – pair analogies – Alphabet analog- Letter coding-Direct letter coding – number/symbol coding

**UNIT II: RELATION AND MATHEMETICAL OPERATION**

**15 Hours**

Blood relations – Jumbled up descriptions- Relation process- Mathematical Operation – problem by substitution Interchanges of sign and numbers

**Text Book:**

Aggarwal . R.S., 2015. Modern Approach to Verbal and Nonverbal Reasoning (Fully solved) Revised edition, S. Chand & Company Pvt. Ltd, New Delhi

| UNIT | Chapter/Section                                  |
|------|--|
| I    | Part A, Section I , 1A to 1E, 2A to 2G, 4A to 4E |
| II   | Part A, Section I,5A to 5B, 13A to 13C           |

**Reference Books:**

1. Abhijit Guha, 2014, Quantitative Aptitude For Competitive Examinations, 5<sup>th</sup> edition, Tata McGraw – Hill Publications, New Delhi.
2. Sijwali BS, Indu Sijwali, 2014. A New Approach to Reasoning Verbal & Non-Verbal Paperback , Arihant Publication

**Course Designers**

Mr. G. Gowtham  
Mrs. M.Hemalatha

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|                           |                                      |                   |             |
|---------------------------|--------------------------------------|-------------------|-------------|
| <b>Course</b>             | <b>: SEC</b>                         | <b>Int.Marks</b>  | <b>: 15</b> |
| <b>Class</b>              | <b>: II/III Year</b>                 | <b>Ext. Marks</b> | <b>: 35</b> |
| <b>Semester</b>           | <b>: IV/VI</b>                       | <b>Max.Marks</b>  | <b>: 50</b> |
| <b>Sub.Code</b>           | <b>: SMMSEC41/SMMSEC61(F)</b>        | <b>Hours/Week</b> | <b>: 2</b>  |
| <b>Title of the Paper</b> | <b>: Software Testing Foundation</b> | <b>Credits</b>    | <b>2</b>    |

**Course Outcomes:**

- Identify suitable tests to be carried out in Software Development.
- Preparing test planning based on the document.
- Document test plans and test cases designed.
- Understanding use of automatic testing tools.
- Develop and validate a test plan.

**Unit I:** **15 hours**

**Principles of Testing :** Context of Testing in Producing Software – The Incomplete Car – Dijkstra’s Doctrine – A Test in Time! – The Cat and the Saint – Test the Tests First! – The Pesticides Paradox. **White Box Testing:** What is White Box Testing? - Static Testing – Structural Testing –Challenges in White Box Testing. **Black Box Testing:** What is Black Box Testing – Why Black Box Testing – When to do Black Box Testing? **Testing of Object-Oriented Systems:** Introduction – Primer on Object-Oriented Software – Differences in OO Testing.

**Unit II:** **15 hours**

**Test Planning, Management, Execution, and Reporting:** Introduction- Test Planning - Test Management –Test Process -Test Reporting. **Software Test Automation:** What is Test Automation? – Terms Used in Automation – Skills Needed for Automation – What to Automate, Scope for Automation -Design and Architecture for Automation – Generic Requirements for Test Tool/Framework – Process Model For Automation – Selecting a Test Tool –Automation for Extreme Programming Model – Challenges in Automation.

**TEXT BOOKS**

1. Srinivasan Desikan, Gopaldaswamy Ramesh, 2014, “Software Testing Principles and Practices”, Pearson Education, New Delhi.

| <b>Unit</b> | <b>Chapters/Section</b> |
|-------------|-------------------------|
| I           | 1 (1.1 – 1.8), 3,4,11.  |
| II          | 15,16.                  |

**REFERENCE BOOKS**

1. Renu Rasani, PradeepOak, 2011, “Software Testing Effective Methods, Tools and Techniques , Tata McGrawHill Education Private Limited, New Delhi.
2. Ilene Burnstein,2003,“Practical Software Testing”,Springer, New York.

**Course designers**

1. Mr. S. Kumarappan.
2. M. Hemalatha

# THIAGARAJAR COLLEGE, MADURAI- 9

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## DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

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|                    |  |            |    |
|--------------------|--|------------|----|
| Course             | NME  | Int.Marks  | 15 |
| Class              | II Year                                    | Ext. Marks | 35 |
| Semester           | III  | Max.Marks  | 50 |
| Sub.Code           | SMINME31                                   | Hours/Week | 2  |
| Title of the Paper | Hardware Assembling and<br>Troubleshooting | Credits    | 2  |

### COURSE OUTCOMES :

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

1. Understand the basic hardware components – Mother boards, Storage devices.
2. Get knowledge how to troubleshoot problems in CPU, Keyboard, Memory and Pointing devices.

### UNIT I :

**15 hours**

**PC Components:** Fundamentals of PC Technology - Fundamental Building Blocks of the PC - Principles of CPU Operation. **The Microprocessor:** CPU Operation - CPU Terminology – PC Family Tree - Troubleshooting the CPU. **Memory:** Memory Chips and Modules –Parity Checking and ECC – DRAM Timing and Memory Types - Troubleshooting Memory. **Motherboards:** Motherboard Controllers and System Resources - The I/O System Bus – Chip Sets – RAM BIOS – CMOS setup – Motherboard Physical Form Factors.

### UNIT II:

**15 hours**

**Magnetic Storage Devices:** Magnetic Storage – The Hard Disk Drives – Floppy Disk Drive – Cartridge Drive. **Optical Storage Devices:** Optical Storage Media-CD-ROM Drive – DVD ROM Drive- Recordable Drives. **I/O Ports and Devices:** Serial Ports – Parallel Ports – Universal Serial Bus. **Keyboard and Pointing devices:** Keyboards – Keyboard Troubleshooting – Pointing Devices – Pointing Devices Troubleshooting.

### TEXT BOOKS:

Craig Zacker , John Rourke : 2015. “The Complete Reference PC Hardware”, Tata McGraw Hill Education Private Ltd, New Delhi.

| Units | Chapters   |
|-------|--|
| I     | 1 (3-6,25-32), 2(43-85), 3(97-105, 108-114),4(125, 138, 149-152, 158, 161-170) |
| II    | 7(287-314),8(315-336),9(337-357),10(364-370,375, 381)                          |

### REFERENCE BOOKS:

1.Michael Meyers : 2003. “Introduction to PC Hardware and Troubleshooting”, Tata McGraw Hill Education Private Ltd, New Delhi.

### COURSE DESIGNERS

1. Ms. C.D. Balapriya
2. Mrs. P.Praveena



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|                           |                                  |                   |             |
|---------------------------|----------------------------------|-------------------|-------------|
| <b>Course</b>             | <b>: NME</b>                     | <b>Int.Marks</b>  | <b>: 15</b> |
| <b>Class</b>              | <b>: II Year</b>                 | <b>Ext. Marks</b> | <b>: 35</b> |
| <b>Semester</b>           | <b>: V</b>                       | <b>Max.Marks</b>  | <b>: 50</b> |
| <b>Sub.Code</b>           | <b>: SMINME51</b>                | <b>Hours/Week</b> | <b>: 2</b>  |
| <b>Title of the Paper</b> | <b>Basics of Web Development</b> | <b>Credits</b>    | <b>2</b>    |

**COURSE OUTCOMES:**

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

1. Understand World Wide Web concepts like Internet, Email and Browsers
2. Learn HTML tags and how to create web pages in HTML.

**UNIT I**

**15 hours**

**Introduction to Internet:** Computers in Business – Networking – Internet – Electronic Mail – Resource Sharing – Gopher – World Wide Web – Usenet – Telnet – Bulletin Board Service **Internet Technologies:** Modem, Internet Addressing – Physical Connections – Telephone Lines **Internet Browsers:** Internet Explorer – Netscape Navigator

**UNIT II**

**15 hours**

**Introduction to HTML:** Designing a Home page – History of Html – Anchor Tags- Hyper Links . **Head and Body Sections :** Header Section, Title, Links **Designing the Body Section:** Heading Printing – Aligning the Headings – Horizontal Rule – Paragraph – Images and Pictures. **Ordered and Unordered Lists:** Lists, Unordered List, Headings in List, Ordered Lists. **Table Handling :** Tables – Table Creation in HTML – Width of the Table and Cells - Coloring Cells

**TEXT BOOK:**

C Xavier : 2015 . “World Wide Web Design with HTML”, Tata MCGraw Hill Education.

| Units | Chapters/Sections   |
|-------|---|
| I     | 1 (1.1 – 1.10) 2(2.1-2.4) 3(3.1,3.2)  |
| II    | 4(4.1,4.2,4.5,4.6) 5( 5.1,5.2,5.4)<br>6(6.1-6.4,6.6) 7(7.1-7.4)<br>8(8.1,8.2,8.3,8.5) |

**REFERENCE BOOKS:**

1. Harvey & Paul Deitel & Associates, Harvey Deitel and Abbey Deitel: 2011. "Internet and World Wide Web - How To Program", Fifth Edition, Pearson Education.
2. Achyut S Godbole and Atul Kahate : 2012. "Web Technologies", Second Edition, Tata McGraw Hill.
3. Thomas A. Powel : 2001. "The Complete Reference HTML", Third Edition, Osborne / MCGRAW Hill.
4. [www.w3schools.com/html](http://www.w3schools.com/html)

**COURSE DESIGNERS**

1. Ms. C.D. Balapriya
2. Mrs. P. Praveena

