



**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS),
Sivakasi**

(Affiliated to Madurai Kamaraj University, Reaccredited with "A" Grade by NAAC,
College with Potential for Excellence by UGC & Mentor Institution under UGC PARAMARSH)

NAAC SSR Cycle IV (2015-2020)

**1.1. CURRICULUM DESIGN AND
DEVELOPMENT**

**1.1.1. CURRICULUM DEVELOPMENT AND
IMPLEMENTATION**

SYLLABUS

**THE STANDARD FIREWORKS RAJARATNAM
COLLEGE FOR WOMEN (AUTONOMOUS)**

(Reaccredited with 'A' Grade by NAAC and
College with Potential for Excellence by UGC)

SIVAKASI - 626 123.

Affiliated to Madurai Kamaraj University, Madurai.



Programme Scheme, Scheme of Examination and Syllabi

(With effect from June 2016)

DEPARTMENT OF COMPUTER SCIENCE

*PG PROGRAMME
(M.Sc Computer Science)*

Curriculum Design & Development Cell

P. Prasanna
CHAIRMAN OF
THE BOARD

J. Seen. Smit.
H. Jayalakshi
CDDC

T. Palaniveshi
CDACU
ACADEMIC
AFFAIRS

E. Ponnupalan
21/7/16.
COE

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI – 626 123.**
(Reaccredited with *A Grade* by NAAC and
College with Potential for Excellence by UGC)

**DEPARTMENT OF COMPUTER SCIENCE
M.Sc DEGREE PROGRAMME IN COMPUTER SCIENCE**

RULES AND REGULATIONS, PROGRAMME SCHEME AND SCHEME OF EXAMINATION GOVERNING
THE M.Sc DEGREE PROGRAMME IN COMPUTER SCIENCE
(For those admitted in June 2016 and later)

I. Programme Objectives:

The objectives of the programme are

1. To equip the students with skills and practical experience to work successfully in the present sophisticated computing environment.
2. To provide a foundation in professional standards of analysis, design, implementation, testing and documentation in software development.
3. To prepare the learners to take up the challenges of research and development in the field of IT.
4. To give the students an excellent background for a successful career in IT Industry and Educational Institutions.

II. Eligibility condition for admission:

Candidates for admission to Master's Degree course in Computer Science should have Higher Secondary (+2) level Mathematics with Bachelor's Degree in Computer Science / Information Technology and BCA of Madurai Kamaraj University or any other University recognized by the Syndicate of Madurai Kamaraj University as equivalent thereto.

Candidate should have passed the Degree with a minimum of 55 % marks in Part – III. In case of SC/ST candidates, they should have passed the degree with a minimum of 50 % marks in Part –III.

III. Duration of the programme:

The duration of the programme is two academic years. Each Academic Year consists of two semesters. The duration of a semester is 90 working days.

Attendance:

The Rules regarding the attendance for regular classes for the candidates to appear for the End Semester examinations are framed as given below:

- a) Each student must put in a minimum attendance of 67 days (75% of 90 days per semester) so as to become eligible to appear for the End Semester examinations.

Shortage of attendance:

- b) Those students with an attendance of 66 days and less but 59 days and above (65%) can be permitted to appear for the End Semester examinations provided they get the condonation certificate from the Principal stating the proper reasons for the absence, within 5 days after the last working day of the concerned class. The Certificate may be obtained from the office on payment of penalty as per Madurai Kamaraj University.
- c) In case of attendance with 58 days and less but 45 days and (50%) above, the students cannot appear for the End Semester examinations of that semester but can appear for the next End Semester examinations by obtaining special permission from the Principal proceeding necessary documents supporting the reasons for absence on payment of penalty as per Madurai Kamaraj University. Students with an attendance of 44 days and less should have to repeat the whole semester.

IV. Evaluation Procedure:

Evaluation of each theory course will be 25% Continuous Internal Assessment (CIA) and 75% End Semester examination. Evaluation of each Practical Course will be 40% Continuous Internal Assessment (CIA) and 60% end semester examination. Project will be 100% End Semester examination Evaluation. A mark statement will be issued to every student at the end of every semester.

V. Passing Minimum:

For a pass in each course, a student should secure a minimum of 45% marks in the End Semester examination and a minimum of 50% marks in aggregate (i.e., CIA and End Semester examination marks put together).

VI. Eligibility condition for getting the Degree:

A candidate undergoing the M.Sc degree programme in Computer Science will be eligible for the award of M.Sc degree in Computer Science; if she completes the entire programme and passes all the examination prescribed for the programme.

VII. Classification of Successful Candidates:

The successful candidates will be classified as per the details given in the table below:

CGPA	GRADE	Classification of Final Result
9.500 – 10.000	O+	First Class
9.000 – 9.499	O	
8.500 – 8.999	D++	
8.000 – 8.499	D+	
7.500 – 7.999	D	
7.000 – 7.499	A++	
6.500 – 6.999	A+	
6.000 – 6.499	A	
5.500 – 5.999	B+	Second Class
5.000 – 5.499	B	
0.000 – 4.999	U	Re-appear

VIII. Awards of Ranks :

Candidates who qualify themselves for the respective degree programme passing all the examinations in the first attempt and secured first class are eligible for ranking.

For Each Major:-

$$\text{Cumulative Grade Point Average [CGPA]} = \frac{\sum_i C_i G_i}{\sum_i C_i}$$

$$\text{CGPA} = \frac{\text{Sum of the multiplication of grade points by the respective credits of the course cleared in the entire programme}}{\text{Sum of the credits of all the courses cleared in the programme}}$$

Where,

C_i = Credits earned for course i in any semester.

G_i = Grade point obtained for course i in any semester.

\sum_i = Summation of all courses cleared in a semester in the case of GPA and all courses cleared in all semesters in the case of CGPA.

IX. Other Provisions:

1. Those who are absent for the examination should be marked AA on the Mark sheet.
2. If there is a charge of malpractice on a student she should be sent out from the Examination hall and given chance only during the following Semester.
3. The courses she has already appeared during that semester will not be considered.
4. A student can appear for any number of arrear courses.
5. Repeat examinations will be conducted for the final semester paper within a month after the publications of final semester results.
6. Revaluation is permitted.

X. Transitory Provisions:

Students from other institutions shall be considered if they have already written and passed all the Courses covered till the previous semester. If any of the Courses have not been cleared, they have to appear for those subjects along with the current semester subjects also. Equivalence of completed courses and courses to be completed should be decided by the Chairman of the Board of Studies.

Those students who have discontinued in the middle of the programme may be admitted in the respective semester if they want to rejoin and complete the programme; provided they had not got their transfer certificate.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.

M.SC COMPUTER SCIENCE

ALLOTMENT OF CREDITS AND HOURS

(For those joined in June 2016 and later)

Subject	Semester				Total Credits
	I	II	III	IV	
Core Courses					
Paper I	4 (4)	4 (4)	4 (4)	-	55
Paper II	4 (4)	4 (4)	4 (4)	-	
Paper III	4 (4)	4 (4)	3 (3)	-	
Paper IV	3 (3)	3 (3)	-	-	
Practical I	5 (3)	5 (3)	4 (2)	-	
Practical II	4 (2)	4 (2)	4 (2)	-	
Project	-	-	-	30 (15)	15
Total Credits					70
Elective Courses					
Core Elective	6 (5)	-	5 (5)	-	20
Non Major Elective	-	6 (5)	6 (5)	-	
Total	30 (25)	30 (25)	30 (25)	30 (15)	90

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.

M.SC COMPUTER SCIENCE

(For those joined in June 2016 and later)

Sem	Course Code	Title of the paper	Teaching Hours/Week	Credits	Duration of Exam (hrs)	Marks Allotted		
						Internal	External	Total
Core Courses								
I	16PCS11	Computer Organization	4	4	3	25	75	100
	16PCS12	Discrete Structures	4	4	3	25	75	100
	16PCS13	Data Structures & Algorithms	4	4	3	25	75	100
	16PCS14	Object Oriented Programming	3	3	3	25	75	100
	16PCS1L1	Data Structures & Algorithms Lab	5	3	3	40	60	100
	16PCS1L2	C++ Programming Lab	4	2	3	40	60	100
	16PCS1EA	Elective – I	6	5	3	25	75	100
II	16PCS21	Operating Systems	4	4	3	25	75	100
	16PCS22	Internet Programming	4	4	3	25	75	100
	16PCS23	Database Management System	4	4	3	25	75	100
	16PCS24	Advanced Computer Networks	3	3	3	25	75	100
	16PCS2L1	Internet Programming Lab	5	3	3	40	60	100
	16PCS2L2	DBMS Lab	4	2	3	40	60	100
	16PCS2E	Elective II - Internet & its Applications	6	5	3	25	75	100
III	16PCS31	3D Modeling & Animation	4	4	3	25	75	100
	16PCS32	.NET Programming	4	4	3	25	75	100
	16PCS33	Principles of Compiler Design	3	3	3	25	75	100
	16PCS3L1	3D Modeling & Animation Lab	4	2	3	40	60	100
	16PCS3L2	.NET Programming Lab	4	2	3	40	60	100
	16PCS3E1	Elective – III UGC Net Prelims - Computer Science	6	5	3	25	75	100
	16PCS3EB	Elective IV	5	5	3	25	75	100

Sem	Course Code	Title of the paper	Teaching Hours/Week	Credits	Duration of Exam (hrs)	Marks Allotted		
						Internal	External	Total
IV	16PCS4P	Major Project work and Viva Voce	-	15	-	-	100	100
Elective – I								
I	16PCS1E1	Graphics & Multimedia	6	5	3	25	75	100
	16PCS1E2	Data Mining & Data Warehousing	6	5	3	25	75	100
Elective – IV								
III	16PCS3E2	Object Oriented Analysis & Design	5	5	3	25	75	100
	16PCS3E3	Soft Computing	5	5	3	25	75	100
			Total	90				

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS11 - COMPUTER ORGANIZATION
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To understand the basic concepts of digital principles.
2. To study the logical designs.
3. To understand the construction of memories, I/O and control units.
4. To know the computer architecture.

Unit I **(12 hrs)**

Computer Operation: Basic Components of Digital Computer – Programming Overview - Assembly Languages - High level Languages. **Number Systems:** Binary Addition and Subtraction – Binary Multiplication and Division – Converting Decimal Numbers to Binary – Negative Numbers – Use of Complements to represent Negative Numbers – Binary-Coded-Decimal Number Representation – Octal and Hexadecimal Number Systems. **Boolean Algebra and Gate Networks:** Fundamental concepts of Boolean Algebra – AND Gates and OR Gates – Complementation and Inverters – Evaluation of Logical Expressions – Basic Laws of Boolean Algebra.

Unit II **(12 hrs)**

De Morgan's Theorem – Derivation of a Boolean Expression – Interconnecting Gates – Sum of Products and Product of Sums – Derivation of a Three-Input-Variable Expression–NAND and NOR Gates. **Logic Design:** Flip flops – Clocks - Flip flop Designs - Shift Register - Binary Counter - BCD Counters - Integrated Circuits - Medium, Large, and Very Large-Scale Integration. **The Arithmetic-Logic Unit:** Construction of the ALU, Integer Representation, Binary Half Adder, Full Adder, A Parallel Binary Adder, Multiplexers.

Unit III **(12 hrs)**

The Memory Element: Random Access Memories -Static Random-Access Memories - Dynamic Random-Access Memories , Read-Only Memories, Magnetic Disk Memories – Flexible Disk Storage System-The Floppy Disk – Magnetic Tape - Optical Storage Devices – Computer Word Structures - Storage hierarchies – Virtual Memory - Cache memory

Unit IV**(12 hrs)**

Input Output devices: Terminals, Personal Computers and Workstations - Input Media - Character Recognition - Output Equipment - Error - Detecting and Error - Correcting codes - Buses for Personal Computers and Workstations. **Control Unit:** Construction of an Instruction Word – Instruction Cycle and Execution Cycle Organization of Control Registers – Branch, Skip or Jump Instructions – Shift Instructions - Register Transfer Language.

Unit V**(12 hrs)**

Computer Architecture: Instruction Word Formats: Number of Addresses - Representation of Instructions and Data - Addressing Techniques – Direct Addressing- Immediate Addressing – Relative Addressing – Indirect Addressing – Indexed Addressing – BRANCH and JUMP Instructions - Flags, Condition Codes and Status Registers - Subroutine Calls – Interrupts – Pipelined Computers– RISC and CISC Architectures – Security and Protection. **Pipelining:** Basic Concepts - Role of Cache Memory - Pipeline Performance - Data Hazards - Operand forwarding- Handling data hazards in software - Side Effects.

Text Books:

1. Thomas C Bartee (2010), “Computer Architecture & Logic Design”, Tata McGraw Hill.

Unit I	Chapter: 1 (1.4 - 1.5, 1.7 & 1.8)	(Pages 6 - 12 & 16 - 19),
	Chapter: 2 (2.4 - 2.10)	(Pages 24 - 38),
	Chapter: 3 (3.1 - 3.5)	(Pages 55 - 65)
Unit II	Chapter: 3 (3.6 - 3.11)	(Pages 65 - 78),
	Chapter: 4 (4.1 - 4.8)	(Pages 132 - 162),
	Chapter: 5 (5.1 - 5.5 & 5.13)	(Pages 190 - 197, 227 - 229)
Unit III	Chapter: 6 (6.1, 6.6 - 6.11 & 6.14 - 6.18)	(Pages 245 - 247, 263 - 286 & 288 - 309)
Unit IV	Chapter: 7 (7.1 - 7.6)	(Pages 322 - 344),
	Chapter: 9 (9.1 - 9.2 & 9.5- 9.7)	(Pages 417 - 424 & 433 - 441)
Unit V	Chapter:10 (10.1 - 10.15)	(Pages 452 - 483)

2. Carl Hamacher, Zvonko Vranesic and Safwat Zaky (2012), “Computer Organization”, Fifth Edition, Tata McGraw Hill.

Unit V	Chapter 8: (8.1 - 8.2)	(Pages 454 – 465)
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Reference Books:

1. William Stallings (2010), Computer Organization and Architecture – Designing for Performance, 8th Edition, Pearson Education.
2. M. Morris Mano (2008), Computer System Architecture, Third Edition, Pearson Education Publication.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS12 – DISCRETE STRUCTURES
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To contribute a bridge connecting various branches of Computer Science and Mathematics.
2. To endow with detailed study about discrete structure of mathematics those are essential to develop the various concepts of Computer Science.
3. To deal with theory of automata that plays a key role in compiling techniques.
4. To develop aptitude skills to meet the global demand.

Unit I **(12 hrs)**

Logic: Statements and Notation – Connectives: Negation – Conjunction – Disjunction – Statement formulas and Truth Tables – Conditional and Bi-conditional - Well-Formed Formulas – Tautologies – Equivalence of Formulas – Duality law – Tautological Implications – Normal forms: Disjunctive Normal Forms – Conjunctive Normal Forms – Principal Disjunctive Normal Forms – Principal Conjunctive Normal Forms.

Unit II **(12 hrs)**

Relations: Cartesian Product of two Sets – Relations -Representation of a relation-Operations on relations -Equivalence Relation – **Functions:** Function and Operators -One to One, Onto functions - Special types of functions - Invertible functions-Composition of functions.

Unit III **(12 hrs)**

Matrix Algebra: Introduction (Basic definitions) – Matrix Operations (Addition and multiplication of two matrices, Transpose) – Inverse of a Square Matrix (determinant, properties of determinant) – Elementary Operations and Rank of a Matrix – Simultaneous Linear Equations – Eigen Values and Eigen Vectors.

Unit IV **(12 hrs)**

Automata, Languages and Computation : Introduction – Finite Automata - Definition of Finite Automaton - Representation of Finite Automaton - Acceptability of a string by a Finite Automaton - Language accepted by a Finite Automaton.

Unit V

(12 hrs)

Non-Deterministic Finite Automata : Definition of Non-deterministic Finite Automata – Acceptability of a String by Non-deterministic Finite Automata - Equivalence of FA & NFA - Procedure for finding an FA equivalent to a given NFA – Phrase Structure Grammars .

Text Books:

1. Tremblay J.P. and Manohar (2011), “Discrete Mathematical Structures with applications to Computer Science”, Tata McGraw Hill Education Private Ltd., New Delhi.

Unit I Chapter: 1 (1.1, 1.2.1 – 1.2.4, 1.2.6 – 1.2.11, 1.3.1 – 1.3.4)
(Pages 2 – 14, 18 – 34, 50 – 57)

2. Venkatraman M.K., Sridharan N., Chandrasekaran N. (2011), “Discrete Mathematics”, The National Publishing Company, Chennai.

Unit II Chapter: 2 (2.1 – 2.5) (Pages 2.1–2.28),
Chapter: 3 (Pages 3.1–3.20).

Unit III Chapter: 6 (6.1 - 6.5, 6.7) (Pages 6.1- 6.31, 6.37–6.40)

Unit IV Chapter: 12 (12.1 - 12.6) (Pages 12.1–12.12)

Unit V Chapter: 12 (12.7 – 12.10, 12.16) (Pages 12.12–12.24, 12.43–12.54)

Reference Books:

1. Hopcroft J.E. and Ullman J.D (2007), “Introduction to Automata Theory, Languages and Computation”, Narosa Publishing House, Third Edition.
2. Shahnaz Bathul (2010), “Mathematical Foundations of Computer Science”, PHI Learning Private limited, New Delhi.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS13 - DATA STRUCTURES & ALGORITHMS
(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 04

Objectives:

1. To master the design and application of linear.
2. To understand various algorithm and analysis design.
3. To train the students to implement the Tree Concepts.
4. To impact knowledge about various sorting techniques.

Unit I **(12 hrs)**

Stacks and Queues: Stacks – Stacks Using Dynamic Arrays – Queues – Circular Queues Using Dynamic Arrays – A Mazing Problem – Evaluation Of Expressions – Multiple Stacks And Queues – **Linked Lists:** Singly Linked Lists And Chains – Representing Chains In C - Linked Stacks And Queues –Polynomials – Additional List Operations - Equivalence Classes – Sparse Matrices – Doubly Linked Lists.

Unit II **(12 hrs)**

Trees: Introduction – Binary Trees – Binary Tree Traversals –Additional Binary Tree Operations – Heaps – Binary Search Trees. **Graphs:** The Graph Abstract Data Type – Elementary Graph Operations - **Sorting:** Insertion Sort – Quick Sort – How Fast Can We Sort? - Merge Sort – Heap Sort – Sorting On Several Keys.

Unit III **(12 hrs)**

Introduction: Algorithm – Algorithm Specification – Performance Analysis - Space Complexity –Time Complexity Asymptotic Notation - **Divide And Conquer:** The General Method – Binary Search – Finding The Maximum And Minimum - Strassen’s Matrix Multiplication - **Greedy Method:** The General Method – Minimum Cost Spanning Trees.

Unit IV **(12 hrs)**

Dynamic Programming : The General Method – Multistage Graphs – All Pairs Shortest Paths – Single-Source Shortest Paths (General Weights) - Optimal Binary Search Trees – String Editing - 0/1 Knapsack – The Traveling Salesperson Problem – Flow Shop Scheduling.

Unit V**(12 hrs)**

Basic Traversal And Search Techniques: Techniques For Binary Trees - Techniques For Graphs – Connected Components And Spanning Trees - **Backtracking:** The General Method – The 8-Queens Problem – Sum Of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem.

Text Books:

1. Ellis Horowitz, Sartaj Sahni and Susan Anderson-Freed (2009), “Fundamentals of Data Structures in C”, Universities Press Private Limited, Second edition.

Unit I Chapter: 3 (3.1 - 3.7) (Pages 107 - 141)
Chapter: 4 (4.1 - 4.8) (Pages 145 - 188)

Unit II Chapter: 5 (5.1 - 5.4, 5.6 - 5.7) (Pages 191 - 215, 222 - 239)
Chapter: 6 (6.1 - 6.2) (Pages 265 - 291)
Chapter: 7 (7.2 - 7.7) (Pages 337 - 359)

2. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran (2011), “Fundamentals of Computer Algorithms”, Galgotia Publications (P) Ltd., New Delhi.

Unit III Chapter: 1 (1.1, 1.2, 1.3.1 – 1.3.3) (Pages 1 - 37)
Chapter: 3 (3.1 - 3.3, 3.7) (Pages 127 - 144, 179 - 183)
Chapter: 4 (4.1, 4.5) (Pages 197 - 198, 216 - 227)

Unit IV Chapter: 5 (5.1 - 5.7, 5.9 – 5.10) (Pages 253 - 295, 298 - 307)

Unit V Chapter: 6 (6.1 - 6.3) (Pages 313 - 329)
Chapter: 7 (7.1 – 7.6) (Pages 339 – 374)

(Excluding Theorems and Analysis)

Reference Book:

1. Alfred Aho, John E. Hopcroft and Jeffrey D.Ullman (2001), “Data Structures and Algorithms”, Pearson Education.

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DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS14 – OBJECT ORIENTED PROGRAMMING
(For those admitted in June 2016 and later)

Contact hours per week	: 03
Total number of hours per semester	: 45
Number of Credits	: 03

Objectives:

1. To understand the concepts of Object Oriented Programming.
2. To obtain an in-depth knowledge about various features of C++.
3. To understand about Templates and Exception handling in C++.
4. To have a glance at C++ File concepts.

Unit I **(9 hrs)**

An overview of C++: Origins of C++ -What is object oriented programming – Some C++ Fundamentals - Introducing C++ Classes – Function Overloading – Operator Overloading – Inheritance – Constructors and Destructors – The C++ Keywords - **Classes and objects:** Classes – Structures and Classes are Related – Unions and Classes are Related – Friend Functions – Friend Classes – Inline Functions – Parameterized Constructors – Static Class Members - When Constructors and Destructors are Executed – The Scope Resolution Operator – Nested Classes – Local Classes – Passing Objects to Functions – Returning Objects –Object Assignment.

Unit II **(9 hrs)**

Arrays, Pointers, References and the Dynamic Allocation Operators: Arrays of Objects – Pointers to Objects – Type Checking C++ Pointers - The this Pointer – Pointers to Derived Types - Pointers to Class Members – References – C++ Dynamic Allocation Operators - **Function Overloading, Copy Constructors and Default Arguments:** Function Overloading – Overloading Constructors – Copy Constructors – Default Function Arguments.

Unit III **(9 hrs)**

Operator Overloading: Creating a Member Operator Function – Operator Overloading using a Friend Function. **Inheritance:** Base Class Access Control – Inheritance and Protected Members – Inheriting Multiple Base Classes – Constructors, Destructors and Inheritance – Granting Access – Virtual Base Classes - **Virtual Functions and Polymorphism:** Virtual Functions – Pure Virtual Functions.

Unit IV

(9 hrs)

Templates: Generic Functions – Applying Generic Functions – Generic Classes. **Exception Handling:** Exception Handling Fundamentals (Catching Class Types, Using Multiple Catch Statements) – Handling Derived Class Exceptions – Exception Handling Options (Catching All Exceptions, Restricting Exceptions, Rethrowing an Exception) – Understanding terminate() and unexpected() - The uncaught() Exception Function – Applying Exception Handling.

Unit V

(9 hrs)

The C++ I/O System basics: Old vs Modern C++ I/O - C++ streams - The C++ stream classes – Formatted I/O- Overloading << and >>. **C++ file I/O :** <fstream> and the file classes – Opening and closing a file – Reading and writing text files – Unformatted and binary I/O – More get() functions – getline() – Detecting EOF – The ignore() function – peek() and putback() –flush() - Random access – I/O status – Customized I/O and files.

Text Book:

1. Herbert Schildt (2009), “The Complete Reference C++”, Tata McGraw Hill, 4th Edition.

Unit I	Chapter: 11	(Pages: 255 - 266, 270 - 288)
	Chapter: 12	(Pages: 289 - 324)
Unit II	Chapter: 13	(Pages: 325 - 357)
	Chapter: 14	(Pages: 359 - 369, 371 - 378)
Unit III	Chapter: 15	(Pages: 383 - 398)
	Chapter: 16	(Pages: 417 - 441)
	Chapter: 17	(Pages: 443 - 448, 453 - 455)
Unit IV	Chapter: 18	(Pages: 460 - 484)
	Chapter: 19	(Pages: 487 - 507)
Unit V	Chapter: 20	(Pages: 509 - 535)
	Chapter: 21	(Pages: 539 - 566)

Reference Book:

1. Balagurusamy E. (2012), “Object Oriented Programming with C++”, Tata McGraw Hill Publishing Company Limited, 5th Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS1L1 – DATA STRUCTURES & ALGORITHMS LAB
(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 03

Objectives:

1. To implement various algorithms.
2. To improve the knowledge in the concept of pointers.
3. To know the implementation of various data structures.
4. To improve the awareness in advanced data structures.

List of Programs

1. Number Generation.
2. Linear Search & Binary Search
3. List Implementation (Array)
4. List Implementation(Pointer)
5. Doubly Linked List
6. Circular Linked List
7. Stack Implementation (Array)
8. Stack Implementation (Pointer)
9. Queue Implementation (Array)
10. Queue Implementation (Pointer)
11. Quick Sort
12. Bubble Sort
13. Tree Traversal
14. Evaluation of an Expression Tree
15. Infix to Postfix
16. Binary Search Tree Implementation

Reference Books:

1. Herbert Schildt (2009), “The Complete Reference C++”, Tata McGraw Hill, 4th Edition.
2. Balagurusamy E. (2012), “Object Oriented Programming with C++”, Tata McGraw Hill Publishing Company Limited, 5th Edition.

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DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
CORE COURSE - MAJOR
16PCS1L2 – C++ PROGRAMMING LAB
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 02

Objectives:

1. To learn the basic programming aspects in C++.
2. To implement programs involving Looping statements.
3. To develop programs involving arrays.
4. To construct programs using Inheritance.

List of C++ Programs:

1. Programs to implement the Number Checking.
2. Programs to implement the Manipulation of Arrays.
3. Programs to implement the Call by Value and Call by Reference.
4. Programs to implement the Function Overloading.
5. Programs to implement the Inline functions.
6. Programs to implement the Friend functions.
7. Programs to implement the Constructors, Pointers and Strings.
8. Programs to implement the Operator Overloading.
9. Programs to implement the various levels of Inheritance.
10. Programs to implement the Simple Text File creation.
11. Programs to implement the Virtual Functions.
12. Programs to implement the Function Templates.

Reference Books:

1. Balagurusamy E. (2012), "Object Oriented Programming With C++", Tata McGraw Hill Publishing Company Limited, 5th Edition.
2. Herbert Schildt (2009), "The Complete Reference C++", Tata McGraw Hill, 4th Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.SC COMPUTER SCIENCE
SEMESTER II
CORE COURSE - MAJOR
16PCS21 –OPERATING SYSTEMS
(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 04

Objectives:

1. To gain knowledge about the concepts of an operating system.
2. To learn how to deal with processes.
3. To learn how to allocate the memory.
4. To learn the concepts of I/O and File Management.

Unit I (12 hrs)

Operating System Functions: What is an Operating System? – Different Services of the Operating System – Uses of System Calls – Graphical User Interface – The Kernel – Booting – Virtual Machine – System Calls – **Process Management.**

Unit II (12 hrs)

The File System: Introduction – Block and Block Numbering Scheme – File Support Levels – Writing a Record – Reading a Record– OPEN/CLOSE Operations – File Organization and Access Management – File Sharing and Protection – Directory Implementation – Directory Operations – Free Space Management – Bit Vector – Log Structured File System – **I/O Management and Disk Scheduling:** Introduction – CD-ROM – Terms and Definitions.

Unit III (12 hrs)

Process Synchronization: The Producer-Consumer Problems – Solutions – The Classical IPC Problems - **Deadlocks** – Introduction – Graphical Representation – Deadlock Prerequisites – Deadlock Strategies

Unit IV (12 hrs)

Memory Management: Introduction – Variable Partitions – Non-Contiguous Allocation -**Paging:** Allocation Algorithms – Swapping – Relocation & Address Translation - **Segmentation:**Swapping – Address Translation & Relocation – Sharing and Protection

Unit V (12 hrs)

Security and Protection: Security Threats – Authentication – Data Encryption – **Parallel Processing:** Introduction – What is Parallel Processing? –

Difference between Distributed and Parallel Processing – Advantages – Writing Programs for Parallel Processing – Classification of Computers – Machine Architectures Supporting Parallel Processing – Operating Systems for Parallel Processors – Issues **Operating Systems in Distributed Processing:** Distributed Processing - Remote Procedure Calls.

Text Book:

1. Achyut S Godbole & Atul Kahate (2011), “Operating Systems”, Tata McGraw Hill Education (India) Private Limited, Third Edition.

Unit I	Chapter: 3 (3.1 - 3.3, 3.6-3.10)(Pages 48 - 55, 62 - 67), Chapter: 6 (6.1 – 6.20) (Pages 182 - 221)
Unit II	Chapter: 4 (4.2.1 – 4.2.5, 4.2.8, 4.2.12 – 4.2.19) (Pages 87 - 97, 102, 128 - 131) Chapter: 5 (5.1, 5.3 - 5.4) (Pages 136 - 152, 172 - 178)
Unit III	Chapter: 7 (7.1 – 7.3) (Pages 227 - 252), Chapter: 8 (8.1 - 8.4) (Pages 256 - 270)
Unit IV	Chapter: 9 (9.1, 9.4 - 9.7) (Pages 274 - 276, 287 - 324)
Unit V	Chapter: 10 (10.2, 10.8, 10.10) (Pages: 358 to 359, 372 - 376, 386, 387), Chapter: 11 (11.1 - 11.9) (Pages 403 - 414), Chapter: 12 (12.2, 12.4) (Pages 424 - 444, 447 - 451)

Reference Books:

1. Abraham Silberschatz (2009), Peter Baer Galvin, Greg Gagne, “Operating System Concepts”, Wiley India(P).Ltd., 8th Edition.
2. William Stallings (2009), “Operating Systems Internals and Design Principles”, Sixth Edition.
3. Deitel, Deitel and Choffnes (2009), “Operating Systems”, Pearson Education, Third Edition, Fourth Impression.
4. Pramod Chandra P.Bhatt (2008), “An Introduction to Operating Systems Concepts and Practice”, PHI Learning Private Limited, New Delhi, Second Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
CORE COURSE - MAJOR
16PCS22 - INTERNET PROGRAMMING
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To be acquainted with the basic concepts of Internet.
2. To become skilled in Java basics.
3. To facilitate better understanding of Applet and AWT.
4. To gain knowledge in developing reusable software components and web pages.

Unit I **(12 hrs)**

The Genesis of Java: The Java Buzzwords. **Data types, Variables and Arrays:** Java Is a strongly Typed Language-The Simple Types- Integers- Floating-point types- Characters- Booleans - Variables- Type Conversion and Casting- Arrays.

Introducing Classes: Class fundamentals- Declaring objects- Assigning Object reference variables- Introducing methods- Constructor- The this keyword.

A Closer Look at Methods and Classes: Overloading methods- Using objects as parameters- Returning Objects- Recursion- Introducing Access Control- Understanding static- Introducing final- Introducing Nested and Inner Classes - Using Command line arguments.

Unit II **(12 hrs)**

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.

Packages and Interfaces: Packages-Access protection-Importing packages- Interfaces.

Exception Handling: Exception handling fundamentals- Exception types- Uncaught Exception – Using try and catch - Multiple catch clauses - Nested try statements – throw – throws – finally - Creating your own Exception subclasses.

Unit III **(12 hrs)**

Multithreaded Programming: The Java Thread Model –The Main Thread – Creating a Thread – Creating Multiple Threads – Using isAlive() and join() – Thread Priorities.

I/O, Applets, and Other Topics: I/O Basics, Reading Console Input – Writing Console Output – The PrintWriter Class – Reading and Writing Files.

String Handling: The String Constructors – String Length – Character Extraction – String Comparison – Searching Strings – Modifying a String – String Buffer.

The Applet Class: Applet Architecture – Applet Skeleton – Simple Applet Display Methods – Requesting Repainting – Using Status Window – HTML Applet Tag – Passing Parameters to Applets.

Unit IV

(12 hrs)

Event Handling: Two event handling mechanisms- The Delegation Event Model-Event Classes- Source of events – Event Listener Interface.

Introducing the AWT: Window fundamentals – Working with Frame Windows – Working with Graphics.

Using AWT Controls, Layout Managers and Menus: Control Fundamentals – Labels – Using Buttons – Applying Checkboxes- Checkbox Group – Choice Controls – Using Lists – Managing Scroll Bars - Using a Text field – Using a Text Area - Understanding Layout Managers.

Unit V

(12 hrs)

A Tour of Swing: JApplet – Icons and Labels -Text Fields – Buttons – Combo Boxes – Tabbed Panes.

JAVA Beans: What is a Java Bean? – Advantages – Application Builder Tools - Developing simple bean using BDK.

Networking: TCP/IP Client Sockets – TCP/IP Server Sockets – Datagrams.

New I/O, Regular Expressions, and other packages: RMI

Servlets: The Life Cycle of a Servlet – A Simple Servlet – Reading Servlet Parameters – Handling HTTP Requests and Responses.

Text Book:

1. Herbert Schildt (2012), “Java2 The Complete Reference”, Tata McGraw-Hill Publications, Fifth Edition.

Unit I Chapter : 1 (Pages 12 - 15),
Chapter : 3 (Pages 41 - 49, 52 – 59, 61 – 70),
Chapter : 6 (Pages 129 - 150),
Chapter : 7 (Pages 155 - 165, 168 – 179, 181 – 184, 188)

Unit II Chapter : 8 (Pages 189 - 220),
Chapter : 9 (Pages 223 - 247),
Chapter : 10 (Pages 249 - 264, 267 - 269)

Unit III Chapter : 11 (Pages 273 - 292),
Chapter : 12 (Pages 313 - 328),
Chapter : 13 (Pages 347 - 351, 355 – 365, 369 - 375),
Chapter : 19 (Pages 632 - 648)

Unit IV Chapter : 20 (Pages 653 - 672),
Chapter : 21 (Pages 691 – 694, 705 - 712),
Chapter : 22 (Pages 735 - 775)

Unit V Chapter : 26 (Pages: 921 – 939),
Chapter : 25 (Pages: 885 – 888, 897 - 901),
Chapter : 18 (Pages: 594 - 596, 601, 623 - 626),
Chapter : 24 (Pages: 874 - 878),
Chapter : 27 (Pages: 951, 953 – 954, 960 – 962, 971 – 974)

Reference Books:

1. E.Balagurusamy (2010), “Programming with JAVA A Primer”, Tata McGraw Hill, New Delhi, Fourth Edition.
2. Ken Arnold and Gosling Holmes (2000), “The Java Programming Language”, Pearson Education, III Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
CORE COURSE - MAJOR
16PCS23 – DATABASE MANAGEMENT SYSTEM
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To provide an overview of database management systems and relational model.
2. To have an idea about storage and indexing.
3. To know about transaction management, Concurrency control & Crash Recovery.
4. To gain knowledge about Query Evaluation and Normal Forms.

Unit I

(12 hrs)

Overview of Database Systems : Managing Data - A Historical Perspective – File Systems versus DBMS – Advantages of a DBMS –Describing and Storing data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People who work with Databases – **Introduction to Database Design :** Database Design and ER Diagrams – Entities, Attributes, and Entity sets – Relationships and Relationship Sets – Additional features of the E-R Model – Conceptual Design with the E-R Model – Conceptual Design for Large Enterprises – The Unified Modeling Language.

Unit II

(12 hrs)

The Relational Model: Introduction to the Relational model, Integrity constraints over relations, Enforcing Integrity constraints, Querying Relational data - Logical Database design: ER to Relational, Introduction to views - **Relational Algebra and Calculus:** Preliminaries, Relational algebra, Relational calculus.

Unit III

(12 hrs)

SQL : Queries, Constraints, Triggers: Overview - The form of a Basic SQL Query - Union, intersect and Except - Nested Queries - Aggregate Operators - Null values - Complex integrity constraints in SQL - Triggers and Active databases - Designing Active Databases - **Overview of Storage and Indexing:** Data on External Storage, File Organizations and Indexing, Index Data Structures.

Unit IV**(12 hrs)**

Overview of Transaction Management: The ACID properties, Transactions and Schedules, Concurrent Execution of Transactions, Lock-Based Concurrency Control, Introduction to Crash Recovery – **Concurrency Control:** 2PL, Serializability, and Recoverability - Introduction to Lock Management - Lock Conversions, Dealing with Deadlocks – **Crash Recovery:** Introduction to ARIES - The Log - Other Recovery –Related structure - The Write Ahead Log protocol – Checkpointing - Recovering from a system crash.

Unit V**(12 hrs)**

Overview of Query Evaluation: The System Catalog - Introduction to Operator Evaluation - Algorithms for Relational Operations – Introduction to Query Optimization – **Schema Refinement and Normal Forms:** Introduction to Schema Refinement - Functional Dependencies – Reasoning about FDs – Normal forms – Properties of Decomposition - Normalization - Other kind of Dependencies.

Text Book:

1. Raghu Ramakrishnan and Johannes Gehrke (2003), “Database Management Systems”, Mc-Graw Hill, Third Edition.

Unit I	Chapter: 1	(Pages 3 - 22)
	Chapter: 2 (2.1 – 2.7)	(Pages 25 - 49)
Unit II	Chapter: 3 (3.1 – 3.6)	(Pages 57 - 91)
	Chapter: 4 (4.1 – 4.3)	(Pages 100 - 124)
Unit III	Chapter: 5	(Pages 130 - 173)
	Chapter: 8 (8.1 - 8.3)	(Pages 273 - 282)
Unit IV	Chapter: 16 (16.1 - 16.4, 16.7)	(Pages 519 - 533, 540 - 544)
	Chapter: 17 (17.1 - 17.4)	(Pages 549 - 559)
	Chapter: 18 (18.1-18.6)	(Pages 579 - 595)
Unit V	Chapter:12 (12.1 - 12.4)	(Pages 393 - 409)
	Chapter:19 (19.1 – 19.6, 19.8)	(Pages 605 - 629, 633 - 640)

Reference Books:

1. Abraham Silberschatz, Henry Korth and S.Sundarshan (2006), “Database System Concepts”, McGraw Hill International Edition.
2. Ramez Elmasri and Shamkant B. Navathe (2009), “Fundamentals of Database Systems”, Pearson Education, Fifth Edition, Third Impression.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
CORE COURSE - MAJOR
16PCS24 – ADVANCED COMPUTER NETWORKS
(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 03

Objectives:

1. To learn the applications of networking.
2. To gain knowledge about TCP/IP protocol suite and the working principle of ATM and its performance.
3. To provide students with an up-to-date survey of developments in High Speed Networks.
4. To enable the students to know techniques involved to support real time traffic and congestion control.

Unit I (9 hrs)

Protocols and the TCP/IP Suite: The Need for a Protocol Architecture – The TCP/IP Protocol Architecture – The OSI Model – Internetworking.

TCP and IP: Transmission Control Protocol (TCP) – User Datagram Protocol – The Internet Protocol (IP) – IPv6.

Unit II (9 hrs)

Frame Relay: Packet-Switching Networks – Frame Relay Networks.

Asynchronous Transfer Mode: ATM Protocol Architecture – ATM Logical Connection – ATM Cells – ATM Service Categories – ATM Adaptation Layer (AAL).

Unit III (9 hrs)

High-Speed LANs: The Emergence of High-Speed LANs – Ethernet – Fiber Channel – Wireless LANs.

Unit IV (9 hrs)

Link-Level Flow and Error Control: The Need for Flow and Error Control – Link Control Mechanisms – ARQ Performance.

Unit V (9 hrs)

Interior Routing Protocols: Internet Routing Principles – Distance Vector Protocol: RIP – Link State Protocol: OSPF.

Exterior Routing Protocols and Multicast: Path Vector Protocols: BGP and IDRP.

Text Book:

1. William Stallings (2013), “High-Speed Networks and Internets”, Pearson Publications, Second Edition.

Unit I Chapter: 2 (Pages **27 – 43**),
Chapter: 3 (Pages **47 - 68**)

Unit II Chapter: 4 (Pages **73 - 88**),
Chapter: 5 (Pages **91 - 117**)

Unit III Chapter: 6 (Pages **121 - 151**)

Unit IV Chapter: 11 (Pages **275 - 299**)

Unit V Chapter: 15 (Pages **419 – 441**),
Chapter: 16 (Pages **443 – 450**)

Reference Books:

1. Rainer Handel, Manfred N. Huber and Stefan Schroder, “ATM Networks: Concepts, Protocols, Applications”, Addison-Wesley, Second Edition.
2. Douglas E. Comer, “Internetworking with TCP/IP Vol. I: Principles, Protocols, and Architecture”, Addison-Wesley, Fourth Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
CORE COURSE – MAJOR
16PCS2L1 - INTERNET PROGRAMMING LAB
(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 03

Objectives:

1. To obtain an idea for developing simple programs using programming constructs.
2. To be familiar with the Applets and AWT controls.
3. To widen the students in developing web based Applications.
4. To train up the students in developing RMI, Beans and Servlets.

List of Programs:

1. Programs using Array
2. Programs using Inheritance
3. Programs using Exception
4. Programs using Multithreading Concept
5. Programs using Applets
6. Programs using Swing
7. Programs using AWT Controls
8. Design of Chat program using TCP/IP
9. Design of Chat program using UDP
10. Program using RMI
11. Programs using Beans
12. Programs using Servlets

Reference Books:

1. Herbert Schildt (2012), “Java2 The Complete Reference”, Tata McGraw-Hill Publications, Fifth Edition.
2. E.Balagurusamy (2010), “Programming with JAVA A Primer”, Tata McGraw Hill, New Delhi, Fourth Edition.
3. Ken Arnold and Gosling Holmes (2000), “The Java Programming Language”, Pearson Education, III Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
CORE COURSE - MAJOR
16PCS2L2 - DBMS LAB
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 02

Objectives:

1. To be familiar with the procedures required to obtain information from a database and the ways in which the DBMS controls the database.
2. To study how to avoid improper or inconsistent data into the database.
3. To work with Forms & Reports.
4. To build up Client/Server based commercial applications.

List of Programs

1. Building a Database – Creating a Database, Entering the Data, Retrieving the records, Deleting and Modifying the records
2. Creating and Manipulating a Database using MYSQL Commands
3. Sorting and Indexing the Database
4. Programs using Type & Row type
5. Learning Built-in Commands and functions
6. PL/SQL programs using if, loops and case statements
7. PL/SQL programs using cursors.
8. Programs to perform exception handling
9. PL/SQL programs using functions, procedures and packages
10. Programs using Views
11. PL/SQL programs using triggers.
12. Application development programs using Oracle forms

Reference Books:

1. P.S. Deshpande (2008), “SQL / PL / SQL for Oracle 9i”, DreamTech Press, New Delhi.
2. Ivan Bayross (2008), “SQL, PL / SQL The Programming Language of Oracle”, BPB Publication, New Delhi.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER II
ELECTIVE II
16PCS2E - INTERNET & ITS APPLICATIONS
(For those admitted in June 2016 and later)

Contact hours per week	: 06
Total number of hours per semester	: 90
Number of Credits	: 05

Objectives:

1. To understand how to connect to Internet.
2. To learn about common Internet Protocols.
3. To get practice with to send and read E-mail.
4. To design the website using necessary HTML tags.

Unit I

(18 Hrs)

Disk Operating system(DOS) – Windows XP: Basic components of windows – START windows – START Button – Moving a window – Resize a window – Maximize and Minimize window – Closing a window – Shutdown windows – Restarting windows – Help and Support in windows – Changing desktop background – Change the Screen Saver – Change the screen appearance – Change the screen resolution – Change the DATE and TIME – Change the desktop theme – Change the mouse setting – File and folder – My Computer – Changing view of files and folders –Grouping files and folders – Windows explorer – Selecting files and folders – Opening a file – Renaming a file – Deleting a file –Restoring a deleted file – Moving a file – Copying a file – Creating a file – Creating a folder – Searching for files and folders – Printing a file – E-mailing a file – Copy files to CD- Working with paint – Working with calculator **Internet :** Internet Access / Dial-up connection-Internet Services features.

Unit II

(18 Hrs)

World Wide Web: Introduction - Web page –Hypertext Markup Languages – HTML tags - Net surfing - **Internet / Web Browsing:** Introduction – What is a Browser - Microsoft Internet Explorer - Viewers - Favorite –Customizing Internet Explorer -Netscape navigator – Bookmarks- Customizing Netscape

Unit III

(18 Hrs)

Internet Addressing: What is Internet Addressing - IP Address - Domain name - Electronic mail -Uniform Resource Locator - **Internet Protocols:** Introduction - Transmission Control Protocol/Internet Protocol (TCP/IP)- File Transfer Protocol - Hypertext Transfer Protocol – Telnet – Gopher - WAIS.

Unit IV

(18 Hrs)

E-mail: Introduction - E-mail messages: Customizing your e-mail programs – Managing your mail- The Zen of E-mailing – Address book – Signature feature – File attachment facility – Setting Priority - Finding an E-mail Address - Mailing Lists – Smileys - Email Ethics (Netiquette) - Email advantages and disadvantages.

Unit V

(18 Hrs)

HTML: Basics of HTML – Hypertext – Hyper Text Markup Language – Basic components of HTML – Formatting the Text HTML – Lists: Lists in HTML – Ordered Lists – Unordered Lists – Directory Lists – Definition Lists – Graphics and Web page: Graphics and HTML documents – Images and Hyperlink anchors – Image Maps – HTML Tables and Frames: HTML tables – Aligning Table Elements – Row and Column Spanning – Netscape Table Enhancements – Frames in HTML – Frameset Container

Text Books:

1. Davinder Singh Minhas (2010), “Dynamic Memory Computer Course Step by Step Guide”, Fusion Books.

Unit I Chapter: 5 (Pages 80 - 84)
Chapter: 6 (Pages 85 - 129, 143- 144)

2. Alexis Leon and Mathews Leon (2008), "Internet For Everyone", Leon Tech World.

Unit I Chapter: 1 (Pages 1 – 9)

Unit II Chapter: 3 (Pages 23 – 31)
Chapter: 4 (Pages 31 – 45)

Unit III Chapter: 5 (Pages 45 – 52)
Chapter: 6 (Pages 53 – 67)

Unit IV Chapter: 8 (Pages 107 – 135)

3. Krishnan N (2001), "Computer Fundamentals and Windows with Internet Technology", SciTech Publications (India) Pvt. Ltd.

Unit V Chapter: 16 (16.1 - 16.6) (Pages : 165 – 194),
Chapter: 19 (Pages : 212 – 233),
Chapter: 20 (Pages : 233 – 244),
Chapter: 21 (Pages: 244 – 267)

Reference Books:

1. Douglas E Comer (2001), “The Internet”, Pearson Education Asia, III Edition.
2. Harley Hahn, “The Internet – Complete Reference”, Tata McGraw Hill, II Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
CORE COURSE - MAJOR
16PCS31 – 3D MODELING & ANIMATION
(For those admitted in June 2016 and later)

Contact hours per week	:	04
Total number of hours per semester	:	60
Number of Credits	:	04

Objectives:

1. To develop real world animations.
2. To realize the basic elements of 3D Studio Max.
3. To distinguish between audio and video files using Premiere.
4. To impart knowledge about Maya.

Unit I **(12 hrs)**

FLASH: Introduction to Flash CS4: Starting Flash CS4 (only about Opening screens) – **Tools of Flash CS4 - Drawing and Editing Objects in Flash CS4 – Working with Layers in Flash CS4:** Introduction - Adding a Layer – Deleting a Layer – Setting Layer Properties – Working with Layers in the Timeline – **Working with Animations in Flash CS4 - Using Tween in Flash CS4:** Introduction – Creating a Motion Tween – Tween Position, Scale, Rotation and Color – Multiple Keyframes – Ease In and Ease Out - Make an Animation Ease In and Ease Out – Rotating in a Motion Tween.

Unit II **(12 hrs)**

3D STUDIO MAX: Introduction to 3ds Max 2010: Understanding the 3ds Max 2010 User Interface – **Fundamentals of 3ds Max 2010:** Understanding Geometry Primitives – Architectural Objects – Working with Objects in 3ds Max 2010: Creating an Object - Saving an Object – Selecting an Object – Moving an Object – Rotating an Object – Scaling an Object – Working with Layers – **Modifiers, Splines, and reactor:** Working with Modifiers: Understanding Modifier Types – Understanding Modifier Stack – Applying Modifiers – **Modeling in 3ds Max 2009:** Modeling Concepts - Exploring Polygonal Modeling – Exploring NURBS Modeling – Converting Objects to NURBS – Editing NURBS – **Lights, Shadows and Cameras:** Understanding Lights – Creating Lights – **Animation and Inverse Kinematics:** Understanding the Animation Concepts.

Unit III **(12 hrs)**

ADOBE PREMIERE PRO: Getting Started with Premiere Pro CS5: Exploring the User interface/Workspace – Working with Workspace – **Working with Media:** Importing Media Files – **Working with Audio:** Exploring Audio Mixer – Using Audio Files in Premiere Pro – Working with Audio Effects – **Working with**

Effects and Transitions: Understanding Effects and Transitions – Working with Effects – Working with Transitions – **Working with Animation and Keyframes:** Working with Keyframes – Creating an Ease-In/Ease-Out Effect using Keyframes.

Unit IV

(12 hrs)

MAYA: Getting Started with 3D and Maya 2009: Exploring Maya 2009 User Interface – **Working with Objects in Maya 2009:** Exploring the Types of Objects in Maya 2009: Polygons – NURBS – Lights – Creating an Object – Selecting and Deselecting an Object – Preselection Highlight Feature – Reflection – Transforming an Object – Using the Universal Manipulator Tool – Grouping and Ungrouping Objects – Duplicating an Object - **NURBS Modeling in Maya 2009:** Introduction – Outlining the components of NURBS – Creating a NURBS curve – Editing a NURBS curve – Creating a NURBS Surface.

Unit V

(12 hrs)

Animating Objects In Maya 2009: Introduction – Describing the Types of Animation – Exploring Animation Controls – Working with Keyframe Animation – Adding sound to an Animation – **Shading, Lighting, and Texturing in Maya 2009 – Rendering Scenes in Maya 2009:** Introduction – Describing the Types of Rendering and Renderers – Exploring the Rendering Methods – Performing Basic Operations for Rendering.

Text Books:

1. LP Editorial Board (2010), “First Lessons in Flash CS4”, Lawpoint Publications, First Edition.

Unit I Chapter : 1 (Pages 4 – 9), Chapter : 2 (Pages 43 – 62),
Chapter : 4 (Pages 121 – 142), Chapter : 5 (Pages 143 – 149),
Chapter : 6 (Pages 159 – 168), Chapter : 7 (Pages 169 – 175)

2. Kogent Learning Solutions Inc.(2010), “3ds Max 2010 in Simple Steps”, Dreamtech Press, New Delhi.

Unit II Chapter : 1 (Pages 11 - 33),
Chapter : 2 (Pages 39 – 43, 47 – 55, 67 - 69),
Chapter : 3 (Pages 76 – 80),
Chapter : 4 (Pages 134, 143 - 154),
Chapter : 5 (Pages 156 - 165),
Chapter : 6 (Pages 182 - 192)

3. Kogent Learning Solutions Inc.(2011), “Premiere Pro CS5 in Simple Steps”, Dreamtech Press, New Delhi.

Unit III Chapter : 1 (Pages 10 - 22), Chapter : 2 (Pages 26 - 35),
Chapter : 5 (Pages 96 - 103), Chapter : 7 (Pages 168 – 200),
Chapter : 8 (Pages 232 - 250).

4. Kogent Solutions Inc (2009), “Maya 2009 in Simple Steps”, Dreamtech Press, New Delhi.

Unit IV Chapter : 1 (Pages **16 - 34**),
Chapter : 2 (Pages **42 - 67**),
Chapter : 4 (Pages **122 - 146**).

Unit V: Chapter : 5 (Pages **166 – 187, 196 - 197**),
Chapter : 6 (Pages **200 - 222**),
Chapter : 7 (Pages **224 - 237**).

Reference Books:

1. Bonnie Blake & Doug Sahlin (2004), “Flash MX 2004 – A Beginner’s Guide”, Dreamtech Publications.
2. Murdock, “3ds Max 9 Bible “, Wiley Publishing Inc., New Delhi.
3. Adele Droblas & Seth Greenberg (2006), “Adobe Premiere Pro 2 Bible”, Wiley Publishing Inc., New Delhi.
4. Meade Arima, “The Complete Reference Maya 8”, Tata McGraw Hill Publishing Company Limited, New Delhi.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
CORE COURSE - MAJOR
16PCS32 – .NET PROGRAMMING
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To learn about the .Net framework.
2. To build effective web applications using .NET technologies.
3. To develop database applications with ADO.NET.
4. To get introduced to various Web Services.

Unit I **(12 hrs)**

Getting started with .NET Framework 3.5: Introduction – Architecture – Components – **Introducing C# 2008:** Data Types, Variables, and Constants – Expressions and Operators - **Namespaces, Classes, Objects, and Structs:** Namespaces – **Pointers, Delegates and Events:** Pointers - Delegates – Events

Unit II **(12 hrs)**

Introducing Windows Presentation Foundation: Main Features Of WPF 3.5 – WPF 3.5 Architecture – WPF 3.5 Class Hierarchy – WPF 3.5 Application Model – **Working With WPF 3.5 Controls, Resources, Styles, Templates And Commands:** WPF 3.5 Controls – Using WPF Controls.

Unit III **(12 hrs)**

Data Access With ADO.NET:Creating Connection Strings – Creating a Connection to a database –Creating a CommandObject –Working with DataAdapters Using DataReader work with Databases - **Working With Active Directory:** Significance of Active Directory – Features of Active Directory – Administering Active Directory - Creating Users – Creating a Group – **Developing Windows Mobile Applications:** Introduction to .NET Compact Framework – New Features – Creating a Simple Smart Device Applications – Developing a Database-Driven Smart Device Application –**Working With Windows Workflow Foundation:** Principles of Windows Workflow Foundation –Components of Windows Workflow Foundation – Types of Workflows – Developing a Simple Workflow Application – Conditions and Rules in Workflows – Implementing Conditions in Workflows – Using Workflows with Windows Forms.

Unit IV

(12 hrs)

ASP.NET 3.5 Essentials: New Features in ASP.NET3.5 - The ASP.NET Life Cycle – **Web Forms:- Standard Controls:** The Label Control – The Button Control – The TextBox Control – The Literal Control – The Placeholder Control – The HiddenField Control – The FileUpload Control – The Image Control – The ImageMap Control – The ListBox Control – The DropDownList Control – The BulletedList Control – The Hyperlink Control – The LinkButton Control – The Checkbox Control – The RadioButton Control – The Table Control – **Navigation Controls:- Treeview, Menu, and SiteMapPath:** Using the TreeView Class - The TreeView Control – Creating the TreeView Control – Generating Treeview from a Database – Using the Menu Class – The Menu Control – Creating Static Menus – Creating Dynamic Menus.

Unit V

(12 hrs)

Validation Controls - Working with Database Controls: The GridView Control – The DataList Control –The DetailsView Control– The FormView Control – The ListView Control –The Repeater Control–The DataPager Control–The SqlDataSource Control – The AccessDataSource Control - **Developing ASP.NET AJAX Applications:** AJAX-A New Approach – Need for AJAX – AJAX and Other Technologies – ASP.NET AJAX Architecture –AJAX Server or Extension Controls – Differentiating Between AJAX and Non-AJAX Applications – Using AJAX Server Controls.

Text Book:

1. Kogent Learning Solutions Inc. (2011), “.Net3.5 Programming Black Book”, Dream Tech Press.

Unit I Chapter: 1 (Pages **2 - 16**), Chapter: 11 (Pages **371 - 401**),
Chapter: 12 (Pages **404 - 409**), Chapter: 14 (Pages **458 - 483**)

Unit II Chapter: 16 (Pages **510 - 524**), Chapter: 17 (Pages **572 - 631**)

Unit III Chapter: 19 (Pages **710 - 743**), Chapter: 23 (Pages **876 - 886**),
Chapter: 9 (Pages **324 - 337**), Chapter: 25 (Pages **932 - 945**)

Unit IV Chapter: 26 (Pages **948 - 954**),
Chapter: 29 (Pages **1013 - 1056**),
Chapter: 30 (Pages **1070 - 1096**)

Unit V Chapter: 31 (Pages **1106 - 1119**),
Chapter: 33 (Pages **1166-1206**),
Chapter: 34 (Pages **1222 - 1241**)

Reference Books:

1. Herbert Schildt (2010), “The Complete Reference C# 4.0”, McGraw Hill Publications.
2. Matthew MacDonald (2011), “The Complete Reference ASP.Net”, McGraw Hill Publications.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
CORE COURSE - MAJOR
16PCS33– PRINCIPLES OF COMPILER DESIGN
(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 03

Objectives:

1. To familiarize the learners with various phases of compilers thereby enhancing their Software design skills
2. To have a thorough knowledge on lexical analyzers
3. To impart complete understanding and development of Compilers
4. To know various code optimization techniques.

Unit I (9 hrs)

Introduction: Language Processors- The Structure of Compiler (Lexical Analysis, Syntax Analysis, Semantic Analysis, Intermediate Code generation, Code Optimization, Code Generation, Symbol-Table Management, Grouping of phases into passes, compiler-construction tools) - **A Simple Syntax-Directed Translator:** Introduction – Syntax definition (Definition of grammars, Derivations, parse trees, ambiguity, Associativity of operators, precedence of operators) – Syntax-directed translation (Postfix notation, synthesized attributes, simple syntax-directed definitions, tree traversals, translation schemes) – Parsing (top-down, predictive, when to use ϵ -productions, designing a predictive parser, left recursion)

Unit II (9 hrs)

Lexical Analysis: The role of the lexical analyzer (Lexical analysis vs parsing, Tokens, patterns and lexemes, Attributes for tokens, Lexical errors) – Input buffering (buffer pairs, sentinels)– Specification of tokens (strings and languages, operations on languages, regular expressions, regular definitions, extensions of regular expressions) – Recognition of tokens (transition diagrams, recognition of reserved words and identifiers, completion of the running example, architecture of a transition-diagram-based lexical analyzer) – Finite automata (nondeterministic finite automata, transition tables, acceptance of input strings by automata, deterministic finite automata) – From regular expressions to Automata (conversion of an NFA to a DFA, simulation of an NFA, Efficiency of NFA stimulation, Construction of an NFA from a regular expression, efficiency of string-processing algorithms).

Unit III (9 hrs)

Syntax Analysis: Introduction (The role of parser, representative grammars, syntax error handling, error recovery strategies) – Context-free grammars (The

Formal definition of a context-free grammar, notational conventions, derivations, parse trees and derivations, ambiguity, verifying the language generated by a grammar, context-free grammars Vs regular expressions) – Writing a grammar (lexical versus syntactic analysis, eliminating ambiguity, elimination of left recursion, left factoring) – Top-down parsing (recursive-descent, first and follow, LL(1) grammars, nonrecursive predictive parsing, error recovery in predictive parsing) – Bottom-up parsing (reductions, handle pruning, shift-reduce parsing, conflicts during shift-reduce parsing) – Introduction to LR Parsing: Simple LR(Why LR Parsers?- Items and LR(0) Automaton- The LR Parsing Algorithm)

Unit IV **(9 hrs)**

Intermediate Code Generation: Variants of Syntax trees- Three address code- Types and Declarations (type expressions, type equivalence, declarations, storage layout, sequences of declarations, fields in records and classes) – Translation of Expressions (operations within expressions, incremental translation, addressing array elements, translation of array references) – Type checking (rules, type conversions, overloading of functions and operators, type inference and polymorphic functions, an algorithm for unification) – Control Flow (Boolean expressions, short-circuit code, flow-of-control statements, control-flow, avoiding redundant GoTo's, Boolean values and jumping code)

Unit V **(9 hrs)**

Code Generation: Issues in the design of a code generator (input to the code generator, target program, instruction selection, register allocation, evaluation order) – **Basic blocks and Flow Graphs-** Basic blocks- Next-Use information- Flow graphs- Representation of Flow Graphs- Loops- **Optimization of Basic blocks-** The DAG Representation of Basic Blocks - Finding local common Sub Expression- Dead Code Elimination- Use of Algebraic Identities- **Peephole optimization-** Eliminating redundant loads and stores- Eliminating Unreachable Code- Flow-of-Control Optimizations- Algebraic Simplification and reduction in strength- Use of machine Idioms.

Textbook:

1. Alfred V. Aho, Monica S.Lam, Ravi Sethi and Jeffrey D. Ullman (2007), “Compilers – Principles, Techniques and Tools”, Pearson Education Pvt. Ltd., 2nd Edition.

Unit I Chapter: 1 (1.1 - 1.2) (Pages 1 - 12),

Chapter: 2 (2.1 – 2.4) (Pages 40 - 68)

Unit II Chapter: 3 (3.1 – 3.4, 3.6 - 3.7) (Pages 109 - 136, 147 - 166)

Unit III Chapter: 4 (4.1 - 4.3.4, 4.4-4.6.3) (Pages 191 - 215, 217 - 252)

Unit IV Chapter: 6 (6.1 - 6.6) (Pages 357 - 408)

Unit V Chapter: 8 (8.1, 8.4-8.5.4, 8.7)

(Pages 506 - 512, 525 - 537, 549 - 553)

(Excluding Exercises)

Reference Books:

1. Alfred V. Aho, and Jeffrey D. Ullman (2002), “Principles of Compiler Design”, First Narosa Publishing House, Twenty fifth Reprint.
2. Hopcroft J.E. and Ullman J.D. (2007), “Introduction to Automata Theory, Languages and Computation”, Narosa Publishing House, Third Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
CORE COURSE - MAJOR
16PCS3L1 – 3D MODELING & ANIMATION LAB
(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 02

Objectives:

1. To widen the knowledge about animations.
2. To be aware of audio and video mixing.
3. To work out audio effects and video transitions.
4. To create realistic lighting effects.
5. To understand rendering techniques.

List of Programs

Flash

1. Perform Graphics/Text masking using Flash.
2. Designing a Screen Saver using Motion Guide, Shape and Motion Tween.
3. Import Graphics and perform Alphabets animation using Shape & Motion Tween in Flash.
4. Design a Flash animation using Onion Skin.
5. Design a short Movie having few scenes in Flash.
6. Design a Quiz Questionnaire using Flash Script.

3D STUDIO MAX

7. Create a Solar system animation
8. Create a Snow fall animation
9. Create a glass drink using transparent effect
10. Create a House model
11. Create an Object with antique gold effect

ADOBE PREMIERE PRO

13. Importing audio & video files and give suitable title.
14. Applying video transitions
15. Audio mixer
16. Applying video effects.

MAYA

17. Drawing basic standard primitives.
18. Creating key frame animation using Rendering options
19. Lighting effects
20. Camera effects
21. Jumping ball animation

Reference Books:

1. LP Editorial Board (2010), "First Lessons in Flash CS4", Lawpoint Publications, First Edition.
2. Kogent Learning Solutions Inc.(2010), "3ds Max 2010 in Simple Steps", Dreamtech Press, New Delhi.
3. Kogent Learning Solutions Inc.(2011), "Premiere Pro CS5 in Simple Steps", Dreamtech Press, New Delhi.
4. Kogent Solutions Inc (2009), "Maya 2009 in Simple Steps", Dreamtech Press, New Delhi.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
CORE COURSE - MAJOR
16PCS3L2 - .NET PROGRAMMING LAB
(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 02

Objectives:

1. To handle comfortably .Net frameworks.
2. To develop an in-depth knowledge on .Net Technology.
3. To enable the ability to work in database management using ADO.Net.
4. To compose the skill set to the emerging language.

List of Programs

VB.NET

1. Simple programs using various controls
2. Database application using Bound controls

C#.NET

3. Simple programs using statements and functions
4. Simple programs using exception handling concept
5. Simple Pointer programs
6. Simple Windowing Applications
7. Database Applications using ADO.Net

ASP.NET

8. Developing Web Programs using standard controls
9. Developing Web Programs using navigation controls
10. Developing Web Programs to display records using Data Grid view
11. Developing Web Programs to add, edit and modify records using Data Grid view

Reference Books:

1. Kogent Learning Solutions Inc. (2010), “.Net3.5 Programming Black Book”, Dream Tech Press.
2. Herbert Schildt (2010), “The Complete Reference C# 4.0”, McGraw Hill Publications.
3. Matthew MacDonald (2011), “The Complete Reference ASP.Net”, McGraw Hill Publications.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
ELECTIVE III
16PCS3E1 – UGC NET PRELIMS - COMPUTER SCIENCE
(For those admitted in June 2016 and later)

Contact hours per week	: 06
Total number of hours per semester	: 90
Number of Credits	: 05

Objectives:

On successful completion of the course the learners will be equipped to

1. recall the concepts of the core courses.
2. perform indepth study and answer the objective questions.
3. undergo training for the NET examination.
4. qualify the NET exam.

Unit I

(18 hrs)

Mathematical Foundations of Computer Science : Group: Abelian group. Graph: Definition, walks, paths, trails, connected graphs, regular and bipartite graphs, cycles and circuits. Eulerian graphs, Planar graphs. Propositional (Boolean) Logic, Predicate Logic, Well-formed-formulae (WFF).-Satisfiability and Tautology.

Computer Arithmetic and Microprocessors : Logic Families : TTL, ECL and C-MOS gates. Boolean algebra and Minimization of Boolean functions. Octal, Hex, Decimal, and Binary - 2's complement and 1's complement arithmetic. Flip-flops – types, race condition and comparison. Combinational and sequential circuits-arithmetic circuits. A/D conversion and D/A conversion. Memory types and organization - Microprocessor architecture, Instruction set and Programming 8085.

Unit II

(18 hrs)

Database Management Systems: SQL : Data definition Language (DDL). Data Manipulation Language (DML). Data Control Language (DCL) commands. Database objects like-Views, indexes, sequences, synonyms, data dictionary.Database Concepts, ER diagrams, Data Models, Design of Relational Database, Normalization, SQL and QBE, Query Processing and Optimization, Centralized and Distributed Database, Security, Concurrency and recovery in Centralized Systems - ORACLE. B Trees - B+Trees - Hashing.

Data Structures and Algorithms: Data, Information, Definition of data structure. Arrays, stacks, queues, linked lists, trees, graphs, priority queues and heaps. Sorting and searching algorithms. Time Complexity - Greedy Algorithm - Dynamic Programming.

Unit III

(18 hrs)

Computer Networks : Network Layers - Channel capacity - Transmission media - Switch Hub, Bridge, Router, Gateways, Routing algorithms – Cryptography.

Data Mining: Data Warehousing - Architecture - Data Mining: Extracting models and patterns - data mining techniques - classification.

Soft Computing: Fuzzy Logic - Artificial Intelligence - Neural networks.

Unit IV

(18 hrs)

Compilers and Theory of Computation: Compilation and Interpretation, Bootstrap compilers, Phases of compilation process. Lexical analysis, Context free grammars, Grammars, Finite Automata, Non-deterministic and NFA, Conversion of NFA to DFA, Parse Trees ,Operator Precedence.

Software Engineering :Software development models, software design ,software testing, software metrics.

Computer Graphics : Devices, Line and Circle drawing algorithms.

Unit V

(18 hrs)

Operating System : Main functions of operating systems. Multiprogramming, multiprocessing, and multitasking. Memory Management: Virtual memory and paging - CPU scheduling, I/O scheduling, Disk scheduling. Unix: Unix Filters and Commands.

Programming Languages: C - Java - Javascript - XML.

Resource Management Techniques: Linear Programming Problem - Assignment Problem - Transportation problem.

Note : Study Material will be provided

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER IV
CORE COURSE - MAJOR
16PCS4P - MAJOR PROJECT WORK AND VIVA VOCE
(For those admitted in June 2016 and later)

Number of Credits : 15

Maximum marks : 100

Duration : 5 months

Objectives:

1. To help the students to develop ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions & research laboratories.
2. To have thorough understanding of the Systems Development Life Cycle (SDLC).
3. To update with the current technologies in the IT industry.
4. To provide a platform to get better placements.

Rules for Project Work

1. A full semester project work shall be undertaken by the candidate in the area of Computer Science to explore her technical skills to cater the needs of the industrial and business organizations. This will be done in collaboration with an industry/business house/organization with an approval of the Head of the institution/department. There shall be a faculty guide and an organizational supervisor for each student.
2. Each Student should select a topic for her project in conclusion with her Faculty Guide and the Head of the Department.
3. A final report of the project shall be submitted by each candidate at the end of the semester of study on or before the date prescribed by the Head of the Department.
4. The Project report should contain 60 to 80 pages.
5. Each Student should submit two copies of her project report for valuation.
6. During External Viva-voce, Project Work and Viva-voce will be evaluated by both the Internal and External Examiners for 100 Marks.
7. Under extraordinary circumstance the student may be permitted to submit the project report in a subsequent semester in which case the student shall not be eligible for the Distinction even if her total marks meet such requirements.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
ELECTIVE I
16PCS1E1 – GRAPHICS & MULTIMEDIA
(For those admitted in June 2016 and later)

Contact hours per week	: 06
Total number of hours per semester	: 90
Number of Credits	: 05

Objectives:

1. To inculcate the learners about fundamental principles of Graphics.
2. To have an overview on 2D and 3D concepts.
3. To expose on Geometric Transformations.
4. To learn the concepts of Multimedia.

Unit I

(18 hrs)

A Survey of Computer Graphics: Computer Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces - **Overview of Graphics systems:** Video Display devices – Raster scan systems – Random scan systems – Graphics Monitors and Workstations – Input Devices – Hard copy Devices – Graphics software.

Unit II

(18 hrs)

Output primitives: Points & lines, Line drawing algorithms: DDA algorithm, Bresenham's line algorithm and Parallel line Algorithms, Circle generation algorithm - Ellipse generating algorithm – other curves - Pixel addressing – Filled-Area Primitives - **Two Dimensional Geometric Transformations:** Basic Transformation: Translation, Rotation, Scaling - Composite transformations: Translations, Rotations, Scaling. Other transformation - Reflection, Shear.

Unit III

(18 hrs)

Two Dimensional Viewing: The Viewing Pipeline – Viewing coordinate Reference frame – Window-to-View port Coordinate Transformation - Clipping operations - Point clipping, Line clipping - Polygon Clipping - Curve Clipping - Text Clipping. **Three Dimensional Concepts:** Parallel Projection-Perspective Projection – Depth Cueing - Visible Line and Surface Identification – Surface rendering – Exploded and cutaway views – Three dimensional and stereoscopic views.

Unit IV

(18 hrs)

Multimedia – An Overview: Introduction – Multimedia Presentation and Production – Characteristics of a Multimedia Presentation – Hardware and Software

Requirements – Uses of Multimedia. **Text:** Introduction – Types of Text – Unicode Standard – Font – Insertion of Text – Text Compression – Text File Formats. **Image:** Introduction – Image Data Presentation – Image Acquisition – (Scanner – Digital Camera) - Image File Formats – Image Processing Software.

Unit V

(18 hrs)

Audio: Introduction – Acoustics - Sound Waves – Types and Properties of Sound -Musical Instrument Digital Interface (MIDI) – Audio File Formats – Audio Processing Software

Video: Introduction – Motion Video – Analog Video Camera – Digital Video-Video File Formats – Video Processing Software.

Animation: Introduction – Historical Background – Uses of Animation – Traditional Animation – Principles of Animation – Animation on the Web -3D Animation – Animation Software .

Text Books:

1. Donald D. Hearn & M. Pauline Baker (2011), “Computer Graphics C Version”, Pearson Education, Second Edition.

Unit I Chapter: 1 (Pages: 22 - 54),
Chapter: 2 (Pages: 55 - 99)

Unit II Chapter: 3 (3.1 - 3.2, 3.5 – 3.7, 3.10 - 3.11)
(Pages: 103 - 114, 117 - 132, 134 - 150),
Chapter: 5 (5.1, 5.3, 5.4)
(Pages: 204 - 208, 211 - 213, 221 - 224)

Unit III Chapter: 6 (6.1 – 6.3, 6.5 – 6.10)
(Pages: 236 - 242, 244 - 264),
Chapter: 9 (9.1) (Pages: 316 - 321),

2. Ranjan Parekh (2013), “Principles of Multimedia”, Tata McGraw Hill Publications, Second Edition.

Unit IV Chapter: 1 (1.1 -1.5) (Pages: 1 - 8),
Chapter: 2 (2.1 – 2.7) (Pages: 39 - 52),
Chapter: 3 (3.1 -3.3, 3.3.1 – 3.3.2, 3.10 – 3.11)
(Pages: 55 - 62, 137 - 143)

Unit V Chapter: 5 (5.1-5.4, 5.9, 5.14, 5.17)
(Pages: 248 - 257, 270 - 275, 317 - 323, 332 - 334),
Chapter: 6 (6.1 – 6.3, 6.7.1, 6.7.2, 6.10, 6.12)
(Pages: 340 – 344, 358 – 364, 384 - 388, 393 - 395),
Chapter: 7 (7.1 –7.5, 7.7, 7.10 – 7.11)
(Pages: 399 - 404, 411 - 412, 422 - 426)

Reference Books:

1. Prabhat K Andleigh & Kiran Thakar (2008), “Multimedia System Design”, PHI.
2. David Hillman (2010), “Multimedia Technology & Applications”, Galgotia Publications Pvt Ltd.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER I
ELECTIVE I
16PCS1E2 - DATA MINING & DATA WAREHOUSING
(For those admitted in June 2016 and later)

Eligibility Condition: PG Computer Science students only

Contact hours per week : 06
Total number of hours per semester : 90
Number of Credits : 05

Objectives:

1. To learn about the basic Data Mining Functionalities.
2. To acquaint the concepts of Data Warehouse and OLAP technology.
3. To gain knowledge about Classification and Clustering Techniques.
4. To acquire the machine learning concepts with Data Mining Software.

Unit I (18 hrs)

Introduction: Data Mining – On what kind of Data – Data Mining Functionalities – Kind of Patterns – Interesting Patterns – Classification of Data Mining.

Unit II (18 hrs)

Data Preprocessing: Need for Preprocessing – Data cleaning – Data Integration and transformation – Data reduction – Data Discretization and concept Hierarchy Generation.

Unit III (18 hrs)

Data Warehouse and OLAP Technology: Introduction to Data Warehouse – A Multidimensional Data model – Data Warehouse Architecture.

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and a Road Map – Efficient and Scalable Frequent Itemset Mining Methods.

Unit IV (18 hrs)

Classification and Prediction: Introduction – Issues regarding classification and prediction – Classification by Decision tree Induction – Bayesian Classification – Rule-Based Classification - Classification by Back propagation.

Unit V (18 hrs)

Cluster Analysis: Introduction – Types of Data in Cluster Analysis - A Categorization of Major Clustering Methods.

Machine Learning with Open Source and Commercial Software: Machine Learning with WEKA – XLMINER.

Text Books:

1. Jiawei Han and Micheline Kamber (2006), “Data Mining: Concepts and Techniques”, Morgan Kaufmann Publishers, San Francisco, Second Edition.

Unit I Chapter: 1 (1.2 – 1.6) (Pages 5 - 30)

Unit II Chapter: 2 (2.1, 2.3 - 2.6) (Pages 47 - 51, 61 - 96)

Unit III Chapter: 3 (3.1 – 3.3) (Pages 105 - 137)
Chapter: 5 (5.1, 5.2.1 & 5.2.2) (Pages 227 - 240)

Unit IV Chapter: 6 (6.1 – 6.6) (Pages 285 - 336)

Unit V Chapter: 7 (7.1 – 7.3) (Pages 383 - 401)

2. Soman K.P, Shyam Diwakar and Ajay V (2006),“Insight into Data Mining: Theory and Practice”, Prentice-Hall of India Private Limited, New Delhi.

Unit V Chapter : 8 (Pages 174 - 199)

Reference Book:

1. Ralph Kimball (1996), “The Data Warehouse Toolkit”, Wiley Publication.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M.Sc COMPUTER SCIENCE
SEMESTER III
ELECTIVE IV
16PCS3E2 – OBJECT ORIENTED ANALYSIS & DESIGN
(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 05

Objectives:

1. To expand the thought of object oriented analysis.
2. To inculcate the object Design.
3. To be acquainted with object Modeling Techniques.
4. To induce a brief knowledge about Unified Modeling Language.

Unit I **(15 hrs)**

Introduction: What is Object Orientation - What is OO development – OO themes. **Modeling as a design technique:** Modeling – Abstraction – The three models. **Class Modeling:** Object and Class concepts – Link and Association concepts – Generalization and Inheritance – A sample class model. **Advanced class modeling:** Advanced Object and Class Concepts - Association Ends – N-ary Associations – Aggregation – Abstract Classes – Multiple Inheritance – Metadata – Reification – Constraints – Derived Data – Packages.

Unit II **(15 hrs)**

State modeling: Events – States – Transitions and Conditions – State diagrams – State diagram behavior. **Advanced State modeling:** Nested state diagrams – Nested states – Signal generalization – Concurrency – A sample state model. **Interaction modeling:** Use case models – Sequence models – Activity models. **Advanced Interaction modeling:** Use case relationships – Procedural Sequence models – Special constructs for Activity models.

Unit III **(15 hrs)**

Process overview: Development stages – Development life cycle. **System conception:** Devising a System concept – Elaborating a concept – Preparing a problem statement. **Domain analysis:** Overview of analysis – Domain class model – Domain State model – Domain Interaction model. **Application analysis:** Application Interaction model – Application class model – Application state model – Adding operations.

Unit IV

(15 hrs)

System design: Overview of system design – Estimating performance – Making a reuse plan – Breaking a system into subsystems – Identifying concurrency – Allocation of subsystems – Management of data storage – Handling Global resources – Choosing a software control strategy – Handling boundary conditions – Setting trade-off priorities – Common architectural styles – Architecture of the ATM system. **Class design:** Overview of class design – Bridging the gap - Realizing use cases – Designing algorithms – Recursing downward – Refactoring – Design optimization – Reification of behavior – Adjustment of inheritance – Organizing a class design – ATM example.

Unit V

(15 hrs)

Introducing the UML: An overview of the UML – A conceptual model of the UML – Architecture. **Artifacts:** Getting Started – Terms and Concepts – Common Modeling Techniques. **Deployment:** Getting Started – Terms and Concepts – Common Modeling Techniques. **Collaborations:** Getting Started – Terms and Concepts – Common Modeling Techniques. **Patterns and Frameworks:** Getting Started – Terms and Concepts – Common Modeling Techniques.

Text Books:

1. Michael R Blaha and James R Rumbaugh (2011), “Object oriented Modeling and Design with UML”, Pearson Education Publications, Second Edition.

Unit I	Chapter: 1 (1.1 – 1.3)	(Pages: 1–8)
	Chapter: 2 (2.1 – 2.3)	(Pages: 15-18)
	Chapter: 3 (3.1 – 3.4)	(Pages: 21–43)
	Chapter: 4 (4.1 – 4.11)	(Pages: 60-81)
Unit II	Chapter: 5 (5.1 – 5.5)	(Pages: 90–103)
	Chapter: 6 (6.1 – 6.5)	(Pages: 110-123)
	Chapter: 7 (7.1 – 7.3)	(Pages: 131-144)
	Chapter: 8 (8.1 – 8.3)	(Pages: 147-157)
Unit III	Chapter: 10 (10.1, 10.2)	(Pages: 167-171)
	Chapter: 11 (11.1 – 11.3)	(Pages: 173-178)
	Chapter: 12 (12.1 - 12.4)	(Pages: 181-204)
	Chapter: 13 (13.1 – 13.4)	(Pages: 216-234)
Unit IV	Chapter: 14 (14.1 – 14.13)	(Pages: 240-262)
	Chapter: 15 (15.1 – 15.11)	(Pages: 270-291)

2. Grady Booch, James Rambaugh and Ivar Jacobson (2012), “The Unified Modeling Language User guide”, Pearson Education, Second Edition.

Unit V	Chapter: 2	(Pages: 13– 34)
	Chapter: 26	(Pages: 351-360)
	Chapter: 27	(Pages: 361-368)
	Chapter: 28	(Pages: 369-381)
	Chapter: 29	(Pages: 383-394)

Reference Books:

1. Bob Hughes, Mike Cotterell (2011), “Software Project Management”, Tata McGraw Hill, Fourth Edition.
2. Humphrey, Watts (2011), “Managing the software process”, Addison Wesley, Fourth Impression.
3. Mahesh P.Matha (2008), “Object Oriented Analysis and Design Using UML”, Prentice Hall of India Pvt. Ltd.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER SCIENCE
M. Sc COMPUTER SCIENCE
SEMESTER III
ELECTIVE IV
16PCS3E3 – SOFT COMPUTING
(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 05

Objectives:

1. To give knowledge of Neural Networks fundamentals.
2. To learn about intelligent systems in the framework of soft computing.
3. To understand the concepts of Fuzzy Logic.
4. To know about Artificial Intelligence concepts.

Unit I **(15 hrs)**

Introduction: Soft Computing - **Artificial Neural Network:** An Introduction: Fundamental Concept – Evolution of Neural Networks – Basic Models of Artificial Neural Network – Terminologies of ANN – McCulloch-Pitts Neuron – Linear Separability – Hebb Network.

Supervised Learning Network: Introduction – Perceptron Networks – Adaptive Linear Neuron (Adaline) – Multiple Adaptive Linear Neurons – Back-Propagation Network

Unit II **(15 hrs)**

Associative Memory Networks: Introduction – Training Algorithms for Pattern Association – Bidirectional Associative Memory (BAM) – Hopfield Networks

Unsupervised Learning Networks: Introduction – Fixed Weight Competitive Networks – Kohonen Self-Organizing Feature Maps

Unit III **(15 hrs)**

Introduction to Classical Sets and Fuzzy Sets: Introduction – Classical Sets: Operations on Classical Sets – Properties of Classical Sets – Function Mapping of Classical Sets – Fuzzy Sets: Fuzzy Set Operations – Properties of Fuzzy Sets.

Classical Relations and Fuzzy Relations: Introduction – Cartesian Product of Relation – Classical Relation – Fuzzy Relations – Tolerance and Equivalence Relations – Noninteractive Fuzzy Sets.

Unit IV **(15 hrs)**

Membership Functions: Introduction – Features – Fuzzification – Methods of Membership Value Assignments

Defuzzification: Introduction – Lambda-Cuts for Fuzzy Sets – Lambda-Cuts for Fuzzy Relations – Defuzzification Methods.

Fuzzy Arithmetic and Fuzzy Measures: Introduction – Fuzzy Arithmetic: Interval Analysis of Uncertain Values – Fuzzy Numbers – Fuzzy Ordering – Fuzzy Vectors

Unit V

(15 hrs)

Genetic Algorithm: Introduction – Basic Operators and Terminologies in GA – Traditional Algorithm vs. Genetic Algorithm – Simple GA – General Genetic Algorithm – Classification of Genetic Algorithm. **Applications of Soft Computing:** Genetic Algorithm based Internet Search Technique.

Text Book:

1. Sivanandam S N and Deepa S N (2007), “Principles of Soft Computing”, Wiley India (P) Ltd.

Unit I Chapter: 1 (1.6) (Pages 8 - 10),
Chapter: 2 (2.1 - 2.7) (Pages 11 – 35),
Chapter: 3 (3.1 -3.5) (Pages 59 – 83)

Unit II Chapter: 4 (4.1, 4.2, 4.5, 4.6) (Pages 117 – 121, 125 - 138),
Chapter: 5 (5.1, 5.2, 5.3) (Pages 181 – 195)

Unit III Chapter: 7 (7.1 - 7.3) (Pages 313 – 322),
Chapter: 8 (8.1 - 8.6) (Pages 339 – 354)

Unit IV Chapter: 9 (9.1 - 9.4) (Pages 369 – 380),
Chapter: 10 (10.1 – 10.4) (Pages 389 – 399),
Chapter: 11 (11.1, 11.2) (Pages 415 – 422)

Unit V Chapter: 15 (15.1 - 15.5 & 15.7) (Pages 475 – 487, 492 - 513)
Chapter: 16 (16.4) (Pages 544 -555)

Reference Book:

1. Jang, J S R, Sun C T and Mizutani E (1998), “Neuro-Fuzzy and Soft Computing”, Prentice Hall.

The Standard Fireworks Rajaratnam College for Women, Sivakasi
Department of Computer Science
M.Sc Computer Science

End Semester Examination - Question Paper Pattern

(For those admitted in June 2016 and later)

Time : 3 Hours

Marks : 75

	Nature of Choice	No. of Questions	Marks	Total
Section – A (Fill in the Blanks and Choose the Best answer)	No choice	10 Questions (Two from each Unit)	10 * 1	10
Section– B	Internal Choice	5 Questions (One from each Unit)	5 * 7	35
Section – C	Open choice	3 out of 5 Questions (One from each unit)	3 * 10	30
Total				75