THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC,
College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF COMPUTER SCIENCE

UG DEGREE PROGRAMME IN COMPUTER SCIENCE

PROGRAMME EDUCATIONAL OBJECTIVES The Graduates will	
PEO1.	be competent software professionals, take up progressive careers in industry and pursue higher studies
PEO2.	be proficient in developing innovative solutions to complex real life problems using existing and novel technologies and become ethical and responsible towards themselves, coworkers, society and nation
PEO3.	adapt to new technologies and constantly upgrade their skills to be a successful Entrepreneur

PROGRAMME SPECIFIC OUTCOMES By the Completion of B.Sc Computer Science programme, the learners will be able to	
PSO1.	exhibit the programming skills, prove expertise in core areas of Computer Science and work with knowledge drawn from multiple disciplines.
PSO2.	comprehend, design, develop and innovate solutions to problems related to Computer Industry.
PSO3.	apply standard practices and strategies in software design and development using open-ended and other programming environments.
PSO4.	communicate effectively the evolutionary changes in computing technologies.
PSO5.	collaborate and be a part of an effective team and lead the team to accomplish their goals.
PSO6.	understand, communicate and effectively interact with people across cultures and perform according to ethical principles.
PSO7.	engage in sustained learning through higher studies, self-directed learning and adapt to changes in computing technologies.

COURSE OUTCOME

Major Course	
Course Code: BDCS11	**Course Title: PROGRAMMING IN C**
On successful completion of the course, the learners should be able to	
CO1 [K2]	explain the basic building blocks, structured programming concepts in C
CO2 [K2]	discuss the use of pointers and files in C
CO3 [K3]	modularize the programs using functions and structures
CO4 [K4]	distinguish different control statements in C
CO5 [K6]	implement arrays and string manipulation

Major Course	
Course Code: BDCS1L1	**Course Title: PROGRAMMING IN C LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]	use simple commands for writing programs
CO2 [K3]	implement programs using branching, looping statements
CO3 [K6]	develop programs with arrays, strings
CO4 [K6]	construct programs using functions and structures
CO5 [K6]	create programs using structures

Major Course	
Course Code: BDCS1L2	**Course Title: PC SOFTWARE LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	launch Word and navigate the editing screen
CO2 [K3]:	apply character formatting and utilize tables in Word document
CO3 [K6]:	create and edit a Word document
CO4 [K6]:	create and work with formulas, functions and charts in Excel
CO5 [K6]:	create impressive presentations with animation effects

Allied Course	
Course Code: BDCS1A	**Course Title: DIGITAL COMPUTER FUNDAMENTALS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	classify various gates, binary codes and illustrate laws and theorems of Boolean Algebra
CO2 [K3]:	convert numbers from one radix to another; build logic circuits after minimizing elements in circuitry
CO3 [K3]:	identify various addressing modes, data transfer & manipulation instructions; implement arithmetic circuits
CO4 [K4]:	compare various memory types, mapping techniques
CO5 [K5]:	assess the functioning of flip-flops and registers

Major Course	
Course Code: BDCS21	**Course Title: OBJECT ORIENTED PROGRAMMING IN C++**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the features of object oriented paradigm and constructs
CO2 [K2]:	illustrate the concepts of pointers and files in OOPs
CO3 [K3]:	implement function overloading and operator overloading
CO4 [K4]:	analyze various types of inheritance in OOPs
CO5 [K6]:	write appropriate classes for a given problem

Major Course	
Course Code: BDCS2L	**Course Title: PROGRAMMING IN C++ LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	write simple programs using object oriented concepts
CO2 [K3]:	apply the concepts of inheritance and overloading
CO3 [K3]:	implement programs using polymorphism and virtual functions
CO4 [K6]:	construct programs using pointers
CO5 [K6]:	develop programs for reading and displaying text files

Allied Course	
Course Code: BDCS2A	**Course Title: DATA STRUCTURES**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain abstract data types for linear and non-linear data structures
CO2 [K2]:	illustrate the searching and sorting algorithms
CO3 [K3]:	implement various operations on linear and non-linear data structures
CO4 [K4]:	choose appropriate data structure for solving problems
CO5 [K6]:	devise algorithms for tree traversals, graph operations and spanning trees

Major Course	
Course Code: BDCS31	**Course Title: OPERATIONS RESEARCH**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	summarize various algorithms and rules used in solving OR problems
CO2 [K2]:	convert the decision making problem into mathematical models, linear programming problem into various forms and unbalanced problem into balanced one
CO3 [K3]:	solve the problems using Graphical method, Simplex methods, Transportation and Assignment methods
CO4 [K4]:	analyze various problems for infeasibility, degeneracy, unboundedness and alternate solutions
CO5 [K6]:	construct networks and schedule the projects for optimality

Major Course	
Course Code: BDCS32	**Course Title: DATABASE MANAGEMENT SYSTEMS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the DBMS concepts, data models, database architecture and SQL relational database terminology
CO2 [K3]:	construct E-R models using the Entity-Relationship concepts, translate into relational tables and use SQL query constructs
CO3 [K4]:	distinguish and compare different data models used to represent a database
CO4 [K5]:	criticize a database design and improve the design by normalization
CO5 [K6]:	create PL/SQL blocks, exceptions and triggers

Major Course	
Course Code: BDCS3L	**Course Title: DBMS LAB**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	demonstrate the DDL and DML commands
CO2 [K3]:	retrieve and manipulate data from one or more tables
CO3 [K3]:	use SQL functions and PL/SQL code constructs in database applications and raise appropriate exceptions
CO4 [K6]:	construct queries in SQL and utilize the features of Oracle
CO5 [K6]:	develop PL/SQL blocks, triggers, functions and procedures

Major Course	
Course Code: BDCS3A	**Course Title: WEB DESIGNING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the basic concepts of internet, HTML and JavaScript
CO2 [K3]:	apply the various HTML tags for designing the Web Pages
CO3 [K3]:	build the Web Sites by making use of CSS
CO4 [K4]:	analyze the programming concepts in JavaScript and DOM
CO5 [K6]:	design the Web Pages using Images, Hyperlinks and Forms

Major Course	
Course Code: BDCS3AL	**Course Title: WEB DESIGNING LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	build user interface forms with appropriate Form Elements
CO2 [K3]:	incorporate CSS in the web pages
CO3 [K6]:	design web pages by using basic HTML tags and anchor tags for linking
CO4 [K6]:	create web pages with frames and tables
CO5 [K6]:	develop programs in JavaScript and DOM

Major Course	
Course Code: BDCS41	**Course Title: PHP PROGRAMMING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	describe the concepts of PHP programming and MySQL
CO2 [K3]:	make use of functions and OOPs concepts to build PHP program
CO3 [K5]:	interpret MySQL database through PHP program
CO4 [K6]:	develop web applications with PHP
CO5 [K6]:	design and work with web database

Major Course	
Course Code: BDCS4L	**Course Title: PHP PROGRAMMING LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	use control structures and functions to develop PHP program
CO2 [K3]:	apply array and string manipulation, file and error handling concepts in PHP application
CO3 [K3]:	make use of OOPs concepts in PHP program
CO4 [K6]:	design web applications and implement image functions.
CO5 [K6]:	create MySQL database and insert, delete and update data from MySQL database with PHP.

Allied Course	
Course Code: BDCS4A	**Course Title: COMPUTER ORIENTED NUMERICAL METHODS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the concepts of numerical methods
CO2 [K3]:	fit the curve of best fit to a given set of data and interpolate the unknown value of the function
CO3 [K3]:	solve the algebraic, transcendental equations and system of linear equations by iterative methods
CO4 [K3]:	find the approximate numerical value of differentials and integrals
CO5 [K3]:	determine approximate solutions to ordinary differential equations

Allied Course	
Course Code: BDCS4AL	**Course Title: PYTHON PROGRAMMING LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	write programs for scientific and general applications
CO2 [K3]:	use different built in data types and python's re module to work with Regular expression
CO3 [K3]:	implement Python programs using control structures, strings and arrays
CO4 [K6]:	create functions, packages and modules in Python
CO5 [K6]:	develop real-world applications using oops, files and Lambda function

Discipline Specific Course	
Course Code: BDCS4DSL	**Course Title: ANGULAR FRAMEWORK LAB**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	demonstrate how to install and run angular scripts
CO2 [K3]:	identify and correct coding errors in script
CO3 [K3]:	implement Angular programs using built in and custom directives
CO4 [K6]:	create applications using template driven forms and services
CO5 [K6]:	create and validate the forms in Angular framework and jQuery UI

Major Course	
Course Code: BDCS51	**Course Title: .NET PROGRAMMING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the basic concepts of .NET Framework, Visual Studio IDE, C#
CO2 [K2]:	describe the essence of ASP .NET life cycle, structure and coding techniques
CO3 [K3]:	choose the access mechanism for databases with different database controls
CO4 [K4]:	analyze the various ASP .NET controls for developing web applications
CO5 [K6]:	design and develop web pages using ASP .NET controls

Major Course	
Course Code: BDCS5L1	**Course Title: PROGRAMMING IN JAVA LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	write programs for scientific and general applications
CO2 [K3]:	integrate object-oriented programming features in their programs
CO3 [K6]:	use the concept of inheritance and interfaces while writing programs
CO4 [K6]:	develop programs using multithreading
CO5 [K6]:	create Applets for animations and displays

Major Course	
Course Code: BDCS5L2	**Course Title: .NET PROGRAMMING LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	use ADO.NET in web applications to manipulate data in a database
CO2 [K3]:	design and use of Web Services and User Control in Web Applications
CO3 [K6]:	create console, windows and web applications in C#
CO4 [K6]:	construct web applications using Standard, Navigation and Validation Controls
CO5 [K6]:	develop web sites using Master Pages

Major Elective Course	
Course Code: BDCS5E1	**Course Title: PROGRAMMING IN JAVA**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	describe the various features, programming constructs and basic concepts of Java
CO2 [K3]:	apply basic object-oriented programming concepts to solve simple problems
CO3 [K4]:	analyze the object-oriented principles namely inheritance, method overloading, overriding and interfaces through examples
CO4 [K5]:	demonstrate the exception handling mechanism and influence of multithreading in Java programs
CO5 [K6]:	create small applets to embed in a webpage

Major Elective Course	
Course Code: BDCS5E2	**Course Title: BLUETOOTH TECHNOLOGY**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the working of Bluetooth
CO2 [K3]:	develop Bluetooth specification
CO3 [K4]:	analyze Bluetooth technology
CO4 [K5]:	justify the need and present products of Bluetooth
CO5 [K6]:	adapt to challenges of wireless technology

Major Elective Course	
Course Code: BDCS5E3	**Course Title: OPERATING SYSTEMS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	illustrate the structure of operating systems and explain the concepts of process management and file system
CO2 [K2]:	demonstrate the different memory management strategies
CO3 [K3]:	identify and handle the deadlocks in process synchronization
CO4 [K4]:	analyze the various CPU scheduling algorithms
CO5 [K5]:	interpret the allocation methods of File systems and compare the disk scheduling algorithms

Major Elective Course	
Course Code: BDCS5E4	**Course Title: DATA MINING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the functionality of the various components
CO2 [K2]:	describe the architecture and the components of a data warehouse
CO3 [K3]:	identify and apply the appropriate data mining methods such as classification, clustering or Association rule mining
CO4 [K4]:	analyze the recent trends in data mining such as web mining and text mining
CO5 [K5]:	choose appropriate data mining techniques to solve real time problems

Major Course	
Course Code: BDCS61	**Course Title: COMPUTER GRAPHICS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	describe the applications and basic concepts of Computer Graphics
CO2 [K2]:	explain various algorithms to scan convert the basic output primitives, area filling and clipping
CO3 [K3]:	use the basic geometric transformations to two-dimensional objects and composite transformations
CO4 [K4]:	analyze the various scan conversion algorithms to rasterize two-dimensional Objects through examples
CO5 [K5]:	choose the techniques and parameters used to enhance the quality of pictures

Major Course	
Course Code: BDCS62	**Course Title: SOFTWARE ENGINEERING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	explain the basic concepts of software engineering
CO2 [K2]:	describe various verification, validation techniques and software maintenance
CO3 [K3]:	use software requirement specification techniques, design techniques and notations
CO4 [K4]:	distinguish and compare different project sizes, organization structures, coupling, cohesion, design notations, walkthroughs and inspections
CO5 [K5]:	evaluate the programmer months and development time using cost estimation techniques

Major Course	
Course Code: BDCS6L	**Course Title: COMPUTER GRAPHICS LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	use the graphics commands in C/C++
CO2 [K3]:	develop simple programs using C functions with Graphical output
CO3 [K6]:	implement algorithms for drawing lines, circles and ellipses
CO4 [K6]:	implement the boundary fill and flood fill algorithms
CO5[K6]:	create animations and dynamic simulations

Major Course	
Course Code: BDCS6P	**Course Title: PROJECT WORK**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	identify a problem in their area of interest and demonstrate the applicability of computerizing it
CO2 [K3]:	participate in a group project to illustrate the dynamics of a diverse work environment
CO3 [K3]:	demonstrate basic level of competency in programming and logic skills
CO4 [K4]:	apply the skills acquired through the programme to business scenarios
CO5 [K6]:	present conclusions effectively, orally and in writing

Major Course	
Course Code: BDCS6E1	**Course Title: COMPUTER NETWORKS**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	describe the functions and protocols of each layer in TCP/IP model
CO2 [K2]:	illustrate the architecture of standard client/server protocols
CO3 [K3]:	utilize checksum and cyclic redundancy check for error detection and MAC protocols for flow control
CO4 [K4]:	analyze the types of transmission media, connecting devices and routing methods
CO5 [K5]:	examine the various media access protocols and transport layer protocols

Major Course	
Course Code: BDCS6E2	**Course Title: SYSTEM SOFTWARE**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	explain the concepts of system software and software testing
CO2 [K2] :	demonstrate the working of assembler, compiler, loader and linker
CO3 [K3] :	identify the functions of macro processors
CO4 [K4] :	categorize the various system software
CO5 [K5] :	assess the features of compilers

PART IV - NON MAJOR ELECTIVE COURSE- I	
Course Code: BDCS4N	**Course Title: COMPUTERS TODAY**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	describe the basic concepts of Computers, Internet and WINDOWS 10
CO2 [K2] :	explain the working of various input, output and storage devices
CO3 [K3] :	use the features of WINDOWS 10
CO4 [K4] :	analyze various E-Mail facilities and services available
CO5 [K5] :	surf through internet and explore the web

PART IV - NON MAJOR ELECTIVE COURSE - II	
Course Code: BDCS5N	**Course Title: FLASH**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	demonstrate the IDE of Flash
CO2 [K2]:	explain the basic concepts of FLASH
CO3 [K3]:	create simple animations using shape tweens and motion tweens
CO4 [K4]:	comment on graphics text, buttons and symbols
CO5 [K6]:	develop animations with various effects

PART IV - SELF EMPLOYMENT COURSE	
Course Code: BDSE69	**Course Title: MOBILE PHONE SERVICING**
On successful completion of the course, the learners should be able to	
CO1 [K2]:	describe the basic concepts of mobile phone functioning
CO2 [K2]:	illustrate electrical mechanisms existing in mobile phones
CO3 [K4]:	categorize electronic components of mobile phone
CO4 [K4]:	analyze mobile phone faults and rectification
CO5 [K6]:	adopt latest mobile phone software

PART IV - SELF EMPLOYMENT COURSE	
Course Code: BDSE69L	**Course Title: MOBILE PHONE SERVICING LAB**
On successful completion of the course, the learners should be able to	
CO1[K3] :	apply rectification mechanism for charging fault, mic fault, ringer fault, speaker fault, display fault and network fault
CO2 [K4]:	examine the track and continuity in Motherboard
CO3 [K4]:	inspect the working of LED
CO4 [K6]:	renovate torch fault, camera fault and water lock problems of mobile phones
CO5 [K6]:	mantle and dismantle Mobile phones

PART IV - JOB ORIENTED COURSE	
Course Code: BDJO63	**Course Title: TALLY**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	explain the concepts, rules and conventions of Accounting
CO2 [K2] :	illustrate the basic concepts of VAT
CO3 [K3] :	implement computerized accounting
CO4 [K4] :	analyze array of accounting procedures and automatic calculations
CO5 [K6] :	create journal, Trial Balance and Final Accounts

PART IV - JOB ORIENTED COURSE	
Course Code: BDJO63L	**Course Title: TALLY LAB**
On successful completion of the course, the learners should be able to	
CO1 [K5] :	estimate profit or loss for an account
CO2 [K5] :	formulate stock summary
CO3 [K5] :	compute the VAT Payable for the transactions
CO4 [K6] :	create Trial balance and Balance sheet
CO5 [K6] :	design Daybook for the given date

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DEPARTMENT OF COMPUTER SCIENCE

PG DEGREE PROGRAMME IN COMPUTER SCIENCE

PROGRAMME EDUCATIONAL OBJECTIVES The Graduates will	
PEO1.	be prepared to achieve successful career in academia / industry as reflected by advancement to positions that include greater responsibility and grow as computing professionals.
PEO2.	have an ability to contribute significantly to contemporary research domains in computer science by pursuing research oriented higher education and/or leading, designing developing or maintaining projects in various technical areas of computer science ethically.
PEO3.	be able to promote companies or lead teams/organizations to solve socially relevant problems.

PROGRAMME SPECIFIC OUTCOMES By the Completion of M.Sc Computer Science Programme, the learners will be able to	
PSO1.	demonstrate their mastery of emerging technologies in field of computer science and realize the necessity for continuing professional development.
PSO2.	identify, formulate and analyze complex problems, reach conclusions using principles of mathematics and computer science.
PSO3.	use research based knowledge and research methods including design, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PSO4.	communicate effectively on complex activities with the project team and with society at large such as being able to comprehend and write effective reports, design documentation and make effective presentations.
PSO5.	function effectively as an individual and as a member/leader in diverse teams and in multidisciplinary settings.
PSO6.	appraise environmental and social issues with ethics and interact with persons from a pluralistic democratic society.
PSO7.	recognize the need for passion towards learning and engage in independent and life-long learning in the broadest context of technological change in the field of computer science.

COURSE OUTCOME

Core Course	
Course Code: MDCS11	**Course Title: COMPUTER SYSTEM ARCHITECTURE**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the computer operations, number systems, Boolean algebra, computer design and architecture
CO2[K2]:	demonstrate the functions of the components of computer system
CO3[K3]:	write the architecture of RISC, CISC and pipelining
CO4[K4]:	analyze the formats of various addressing modes, registers and instructions
CO5[K5]:	perform number conversions, operations and evaluate the logical expressions

Core Course	
Course Code: MDCS12	**Course Title: DISCRETE STRUCTURES**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the basic principles of discrete mathematical structures
CO2[K3]:	identify the types of functions, perform the operations on relations and functions
CO3[K3]:	solve problems using mathematical Logic and system of linear equations and perform matrix operations
CO4[K4]:	analyze the solutions to system of linear equations and the significance of eigen values and eigen vectors
CO5[K6]:	design and formulate the different concepts in Theory of Automata

Core Course	
Course Code: MDCS13	**Course Title: C++ AND DATA STRUCTURES**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	explain the concepts of Classes, Overloading, Inheritance and Virtual Functions
CO2 [K2] :	demonstrate the various operations on linear and non-linear data structures
CO3 [K3] :	make use of Object Oriented Principles for writing application programs
CO4 [K4] :	analyze the need and use of Templates, Exception Handling and Streams
CO5 [K5] :	assess the Internal, External Sorting Algorithms and Hashing

Core Course	
Course Code: MDCS14	**Course Title: ADVANCED DATABASE MANAGEMENT SYSTEM**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the concepts of DBMS, Relational Model, Data storage, Query Optimization and Distributed Database
CO2[K2]:	illustrate the transactions management, control concurrency and normalization
CO3[K3]:	construct queries using Relational Algebra and Calculus and perform B+ tree operations & Hashing
CO4[K4]:	analyze the database using normalization techniques
CO5[K5]:	evaluate and optimize the queries using query optimization techniques

Core Course	
Course Code: MDCS1L1	**Course Title: DATA STRUCTURES USING C++ LAB**
On successful completion of the course, the learners should be able to	
CO1[K3]:	implement various operations on linear and non-linear data structures
CO2[K3]:	apply appropriate data structure for given problems
CO3[K3]:	implement tree traversals
CO4[K5]:	evaluate the expressions using Data Structures
CO5[K6]:	write searching and sorting algorithms

Core / Allied / Elective Course	
Course Code: MDCS1L2	**Course Title: DBMS LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	populate and query a database using SQL DDL/DML commands & MongoDB
CO2 [K3]:	make use of packages, views & triggers in real time applications
CO3 [K6]:	design a database schema for a given problem domain
CO4 [K6]:	create and execute a block of SQL statements using PL/SQL
CO5 [K6]:	design and develop GUI forms for database applications

Elective Course	
Course Code: MDCS1E1	**Course Title: INTERNET OF THINGS**
On successful completion of the course, the learners should be able to	
CO1[K2]:	describe the basics and design principles of IoT, participatory sensing
CO2[K2]:	summarize IoT examples, recent initiatives for design standardization, RFID Technology, Wireless Sensor Network Technology, functions of M2M domains, data adaptation layer, uses of actuators, uses of data communication using serial bus protocols
CO3[K3]:	identify framework, resources which enable IoT development, types of communication technologies &uses of actuators in devices
CO4[K4]:	examine the technology of Smart clothing & Smart cities
CO5[K5]:	justify the need of Smart homes, Smart appliances

Elective Course	
Course Code: MDCS1E2	**Course Title: GRAPHICS & MULTIMEDIA**
On successful completion of the course, the learners should be able to	
CO1[K2] :	describe the applications of Computer Graphics, Graphics hardware, software and display technologies
CO2[K2] :	demonstrate the various clipping algorithms in graphics
CO3[K4] :	analyze various Multimedia concepts
CO4[K5] :	interpret two-dimensional basic output primitives algorithms
CO5[K6]:	develop multimedia applications using text, image, audio, video and animation components

Core Course	
Course Code: MDCS21	**Course Title: OPERATING SYSTEMS**
On successful completion of the course, the learners should be able to	
CO1[K2]:	illustrate the structure of operating systems
CO2[K2]:	describe the process concept, synchronization and deadlocks
CO3[K3]:	apply scheduling algorithms, disk scheduling algorithms, page replacement algorithms handle the deadlocks
CO4[K4]:	analyze the different memory management strategies
CO5[K5]:	interpret the allocation methods of File systems, Mass Storage Structure and I/O Systems

Core Course	
Course Code: MDCS22	**Course Title: ADVANCED JAVA PROGRAMMING**
On successful completion of the course, the learners should be able to	
CO1[K2]:	describe working of exception and event handling, threads, strings, Swings
CO2[K3]:	apply packages, interfaces, exception handling and write Java programs
CO3[K4]:	analyze the working of applets, New I/O Packages, process Regular Expression and networking
CO4[K5]:	interpret the use of AWT controls, Layout menus, Swing and write Java programs
CO5[K6]:	create Java programs to implement graphics, networking, RMI and Servlets

Core Course	
Course Code: MDCS23	**Course Title: DIGITAL IMAGE PROCESSING**
On successful completion of the course, the learners should be able to	
CO1[K2]:	demonstrate the fundamental concepts of digital image processing
CO2[K2]:	illustrate the processing of intensity transformation and frequency domain
CO3[K3]:	apply various compression and morphology techniques over digital images
CO4[K4]:	analyze the techniques of image restoration, reconstruction and object recognition
CO5[K5]:	interpret the various techniques of image description, representation and segmentation

Core Course	
Course Code: MDCS24	**Course Title: CLOUD COMPUTING**
On successful completion of the course, the learners should be able to	
CO1[K2]:	describe Cloud computing, Mobile cloud and Cloud architecture and services
CO2[K2]:	illustrate cloud platforms and infrastructures
CO3[K4]:	analyze cloud services and applications
CO4[K5]:	experiment with mobile cloud
CO5[K6]:	propose capacity of the system to demand through capacity planning

Core Course	
Course Code: MDCS2L1	**Course Title: ADVANCED JAVA PROGRAMMING LAB**
On successful completion of the course, the learners should be able to	
CO1[K3]:	apply programming skills for creating programs with interface, package
CO2[K3]:	develop programs for implementing exception handling and multithreading
CO3[K3]:	implement applets, AWT and swings
CO4[K6]:	create programs based on string manipulation
CO5[K6]:	design chat programs, servlets and establish RMI

Core Course	
Course Code: MDCS2L2	**Course Title: IMAGE PROCESSING LAB**
On successful completion of the course, the learners should be able to	
CO1[K3]:	build programs using various controls in MATLAB environment
CO2[K3]:	make use of arithmetic and logical operations
CO3[K3]:	construct programs for image analysis
CO4[K6]:	design an application with graphical methods
CO5[K6]:	develop programs for color image processing, image compression and image segmentation and representation

Core Course	
Course Code: MDCS31	**Course Title: PYTHON FOR DATA ANALYSIS**
On successful completion of the course, the learners should be able to	
CO1[K2]:	demonstrate the building blocks, statements and data structures in Python
CO2[K2]:	explain the basic concepts of numpy, pandas, data loading, wrangling and visualization
CO3[K4]:	analyze data using numpy, pandas, aggregation and wrangling methods
CO4[K5]:	choose the appropriate tools for plotting and slicing data
CO5[K6]:	create scripts using arrays, functions, lists, tuples and dictionaries

Core Course	
Course Code: MDCS32	**Course Title: ANDROID APPLICATION DEVELOPMENT**
On successful completion of the course, the learners should be able to	
CO1[K2]:	describe android environments, basic controls, widgets of mobile applications
CO2[K3]:	develop database driven mobile application with SQLite database
CO3[K3]:	make use of Google maps and display web pages in Android applications
CO4[K4]:	analyze the features of dialogs, fragments and menus
CO5[K6]:	build and publish Android applications to send SMS and emails

Core Course	
Course Code: MDCS33	**Course Title: SOFTWARE TESTING AND QUALITY ASSURANCE**
On successful completion of the course, the learners should be able to	
CO1[K2]:	illustrate the fundamental concepts of software testing and quality assurance
CO2[K3]:	use of proper tools in test management
CO3[K4]:	examine the various software testing strategies
CO4[K4]:	analyze the functional, nonfunctional, acceptance and regression testing
CO5[K5]:	evaluate the quality metrics for quality improvement

Core Course	
Course Code: MDCS3L1	**Course Title: PYTHON PROGRAMMING LAB**
On successful completion of the course, the learners should be able to	
CO1 [K3]:	apply numpy libraries for data manipulation
CO2 [K6]:	adapt the python working environment
CO3 [K6]:	create python scripts using lists, tuples, set and dictionary
CO4 [K6]:	create scripts using pandas & scikit
CO5 [K6]:	create scripts for data analysis

Core Course	
Course Code: MDCS3L2	**Course Title: ANDROID APPLICATION DEVELOPMENT LAB**
On successful completion of the course, the learners should be able to	
CO1[K3]:	build Android applications using various controls in Android environment
CO2[K3]:	construct a mobile application to view the web page
CO3[K3]:	develop an interactive menu in Android environment
CO4[K6]:	design android applications with media functions
CO5[K6]:	create database driven mobile application with SQLite database

Elective Course	
Course Code: MDCS3E1	**Course Title: DATA MINING AND WAREHOUSING**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	illustrate the Data Mining concepts, Data, Data Preprocessing techniques, classification Methods
CO2 [K2] :	summarize the concepts in Data Warehousing and Online Analytical Processing
CO3 [K3] :	clean and reduce the data using Preprocessing techniques
CO4 [K4] :	analyze the methods in Outlier Detection
CO5 [K5] :	choose the appropriate data mining methods such as classification, clustering or association rule mining

Elective Course	
Course Code: MDCS3E2	**Course Title: ADVANCED COMPUTER NETWORKS**
On successful completion of the course, the learners should be able to	
CO1[K2]:	describe the concepts of data communication and networking
CO2[K3]:	make use of services and protocols of transport layer
CO3[K4]:	classify IPV addressing schemes and routing in network layer
CO4[K4]:	analyze the authentication mechanisms to design secure applications
CO5[K5]:	interpret different techniques for error detection and correction and DLS services

Elective Course	
Course Code: MDCS3E3	**Course Title: PRINCIPLES OF COMPILER DESIGN**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the structure of compiler and different phases of compiler
CO2[K3]:	modularize automata from regular expressions
CO3[K4]:	categorize various parsing techniques and grammar transformation techniques
CO4[K5]:	interpret intermediate code generation and optimization
CO5[K6]	generate lexeme, syntax trees, parse trees, intermediate code for a programming language

Elective Course	
Course Code: MDCS3E4	**Course Title: SOFT COMPUTING**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the concepts of soft computing tools
CO2[K2]:	demonstrate the various neural network models
CO3[K3]:	make use of fuzzy sets operations and relations
CO4[K4]:	analyze the methods in fuzzification and defuzzification
CO5[K5]:	evaluate the operations of Genetic algorithm for a given problem

Core Course	
Course Code: MDCS4P	**Course Title: MAJOR PROJECT WORK AND VIVA VOCE**
On successful completion of the course, the learners should be able to	
CO1[K2]:	demonstrate the applicability of automating it and design solutions using systematic approach
CO2[K3]:	identify a problem in their area of interest
CO3[K4]:	exhibit in-depth knowledge in their problem domain
CO4[K5]:	communicate with the community and present the results in the form of project report
CO5[K6]:	formulate and develop solution to the selected problem

Elective Course for Non Computer Science Students	
Course Code: MDCS2E	**Course Title: ELECTRONIC COMMERCE**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain mobile commerce features
CO2[K2]:	illustrate mobile commerce services and its applications
CO3[K3]:	apply various payment methods in Mobile Commerce
CO4[K4]:	categorize various mobile devices
CO5[K5]:	interpret various security and privacy issues of mobile commerce

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC,
College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF COMPUTER SCIENCE

CAREER ORIENTED PROGRAMME ANIMATION TECHNOLOGY

PROGRAMME EDUCATIONAL OBJECTIVES The Certificate Holders will	
PEO1.	become creative graphical designers and multimedia content developers.
PEO2.	constantly upgrade their skills in multimedia to become a successful entrepreneur.

PROGRAMME SPECIFIC OUTCOMES By the Completion of Career Oriented programme, the learners will be able to	
PSO1.	design and develop innovative graphical models related to multimedia applications
PSO2.	apply standard practices and strategies in graphical design and development using open ended environment
PSO3.	explore knowledge in diverse areas of multimedia technologies and experience an environment conductive in cultivating skills for successful career and entrepreneurship.

COURSE OUTCOME

Core Course	
Course Code: CCAT11	**Course Title: GRAPHIC DESIGN**
On successful completion of the course, the learners should be able to	
CO1[K2]:	basic concepts of designing graphics
CO2[K2]:	describe the workspace and demonstrate the image editing techniques in Photoshop
CO3[K3]:	apply various tools in Photoshop and CorelDraw
CO4[K3]:	illustrate the basic tools and techniques in CorelDraw and Indesign
CO5[K6]:	Creating and editing images

Core Course	
Course Code: CCAT1L	**Course Title: GRAHIC DESIGN LAB**
On successful completion of the course, the learners should be able to	
CO1[K2]:	design various objects in CorelDraw X4
CO2[K2]:	use various tools in modeling objects in CorelDraw X4
CO3[K3]:	modify existing images in Photoshop CS5
CO4[K3]:	apply filter effects
CO5[K6]:	create tables on webpage templates

Certificate Programme In Animation Technology	
Course Code: CCAT21	**Course Title: 2D ANIMATON**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	explain the workspace and drawing tools in Flash
CO2 [K2] :	describe about importing symbols and sounds in Flash
CO3 [K3] :	draw and transform simple objects using Flash tools
CO4 [K3] :	apply animation techniques and filters
CO5 [K6] :	Create simple animation using action script

Certificate Programme In Animation Technology	
Course Code: CCAT2L	**Course Title: FLASH LAB**
On successful completion of the course, the learners should be able to	
CO1 [K2] :	draw images using basic tools in flash
CO2 [K3] :	create simple Animation using frame by frame.
CO3 [K3] :	apply animation techniques.
CO4 [K4] :	construct symbols to library in Flash and add them.
CO5 [K6] :	write scripts to perform specific actions.

Diploma in Animation Technology	
Course Code: CDAT31	**Course Title: 3D ANIMATION**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the basic principles and primitives in 3D Studio Max
CO2[K2]:	explain the rendering methods
CO3[K3]:	apply modifiers to create a new model
CO4[K3]:	create basic animation using key frames
CO5[K4]:	describe the light effects and apply scenes

Diploma in Animation Technology	
Course Code: CDAT3L	**Course Title: 3D STUDIO MAX LAB**
On successful completion of the course, the learners should be able to	
CO1[K2]:	design objects using basic primitives and splines
CO2[K3]:	create new model using modifiers
CO3[K3]:	apply light effects and particle effect
CO4[K3]:	use target and free cameras
CO5[K6]:	create key frame animation

Diploma in Animation Technology	
Course Code: CDAT41	**Course Title: FUNDAMENTALS IN MAYA**
On successful completion of the course, the learners should be able to	
CO1[K2]:	Explain about basic introduction and Interface
CO2[K2]:	design 3D models using polygons and nubs
CO3[K3]:	Apply light effect, animation, shading and textures
CO4[K3]:	Apply Cameras and Dynamic effects
CO5[K4]:	describe rendering methods

Diloma in Animation Technology	
Course Code: CDAT4L	**Course Title: MAYA LAB**
On successful completion of the course, the learners should be able to	
CO1[K2] :	design basic 3D models
CO2[K2] :	construct light effects and texture in 3D objects
CO3[K3] :	apply camera effects and rendering
CO4[K3] :	apply rendering methods
CO5[K6]:	develop key frame animations

Advanced Diloma in Animation Technology	
Course Code: CAAT51	**Course Title: FILM MAKING**
On successful completion of the course, the learners should be able to	
CO1[K2]:	explain the basic concept of film
CO2[K2]:	describe the cinema shooting methods
CO3[K3]:	apply sounds and special effects in film video
CO4[K3]:	apply the video effects and editing script
CO5[K6]:	create a short film

Advanced Diloma in Animation Technology	
Course Code: CAAT5P	**Course Title: PROJECT**
On successful completion of the course, the learners should be able to	
CO1[K2]:	identify a problem in their area of interest and demonstrate the applicability of computerizing it
CO2[K2]:	participate in a group project to illustrate the dynamics of a diverse work environment
CO3[K3]:	demonstrate basic level of competency in programming and logic skills
CO4[K3]:	apply the skills acquired through the programme to business scenarios
CO5[K4]:	present conclusions effectively, orally and in writing

Advanced Diloma in Animation Technology	
Course Code: CAAT61	**Course Title: VISUAL EFFECTS**
On successful completion of the course, the learners should be able to	
CO1[K2]:	Explain Basic Concept of Premiere Pro and Interface
CO2[K2]:	Describe the video editing and after effects
CO3[K3]:	Apply Video Effects and Background Style
CO4[K3]:	Apply After effects adjustments
CO5[K4]:	Describe Audio in Sound Booth

Advanced Diloma in Animation Technology	
Course Code: CAAT6L	**Course Title: VFX LAB**
On successful completion of the course, the learners should be able to	
CO1[K2]:	After effects methods
CO2[K3]:	Apply Video effects
CO3[K3]:	Video and audio editing
CO4[K6]:	Create New Video
CO5[K6]:	Create new audio