

RAJAPALAYAM RAJUS' COLLEGE, RAJAPALAYAM

PG DEPARTMENT OF COMPUTER SCIENCE

Programme Outcomes (PO) of B.Sc. degree programme in Computer Science

- * Scientific aptitude will be developed in Students
- * Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the Computer Science & humanities stream
- * Students will become employable; Students will be eligible for career opportunities in education field, Industry, or will be able to opt for entrepreneurship.
- * Students will possess basic subject knowledge required for higher studies, professional and applied courses.
- * Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.
- * Utilize computer programming skills to solve theoretical and applied problems by critical understanding, analysis and synthesis.
- * To recognize patterns and to identify essential and relevant aspects of problems.
- * Ability to share ideas and insights while seeking and benefitting from knowledge and insight of others.
- * Mould the students into responsible citizens in a rapidly changing interdependent.

Programme Specific Outcomes

PSO1: Think in a critical and logical based manner

PSO2: Familiarize the students with suitable software tools of computer science and industrial applications to handle issues and solve problems in mathematics or statistics and realtime application related sciences.

PSO3: Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.

PSO4: Understand, formulate, develop programming model with logical approaches to Address issues arising in social science, business and other contexts.

PSO5: Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer science and Industrial statistics.

PSO6: Provide students/learners sufficient knowledge and skills enabling them to undertake further

studies in Computer Science or Applications or Information Technology and its allied areas on multiple disciplines linked with Computer Science.

PSO7: Equip with Computer science technical ability, problem solving skills, creative talent and power of communication necessary for various forms of employment.

PSO8: Develop a range of generic skills helpful in employment, internships& societal activities.

PSO9: Get adequate exposure to global and local concerns that provides platform for further exploration into multi-dimensional aspects of computing sciences.

First Year – Semester-I		
COURSE CODE	SUBJECT NAME	SUBJECT OUTCOMES
SCSPC11	PROGRAMMING IN C	Remember the program structure of C with its syntax and semantics
		Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)
		Apply the programming principles learnt in real-time problems
		Analyze the various methods of solving a problem and choose the best method
		Code, debug and test the programs with appropriate Test cases
SCSPC1P	PROGRAMMING IN C LAB	Remember the program structure of C with its syntax and semantics
		Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)
		Apply the programming principles learnt in real-time problems.
		Analyze the various methods of solving a problem And choose the best method
		Code, debug and test the programs with appropriate Test cases
SCSPF11	Foundation Problem Solving Techniques	Study the basic knowledge of Computers. Analyze the programming languages.
		Study the datatypes and arithmetic operations. Know about the algorithms.
		Develop program using flowchart and pseudocode.
		Determine the various operators. Explain about the structures.
		Illustrate the concept of Loops

		Study about Numeric data and character-based data. Analyze about Arrays.
		Explain about DFD Illustrate program modules. Creating and reading Files
SCSPA11	Elective Course 1 - Discrete Mathematics – I	To understand the mathematical concepts like set theory, logics, number theory, combinatory and relations.
		To understand different mathematical logics and functions.
		To Understanding the different form of number theory.
		To gain knowledge on set theory.
		Able to understand Relations and its applications
SCSPS11	Skill Enhancement Course-Fundamentals of Information Technology	Learn the basics of computer, Construct the structure of the required things in computer, learn how to use it.
		Develop organizational structure using for the devices present currently under input or output unit.
		Concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis.
		Work with different software, Write program in the software and applications of software.
		Usage of Operating system in information technology which really acts as a interpreter between software and hardware.
Semester II		
SCSPC21	DATA STRUCTURES AND ALGORITHMS	Understand the concept of Dynamic memory management, data types, algorithms, Big O notation.
		Understand basic data structures such as arrays, linked lists, stacks and queues
		Describe the hash function and concepts of collision and its resolution methods
		Solve problem involving graphs, trees and heaps.
		Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data
SCSPC2P	DATA STRUCTURES AND ALGORITHMS LAB (C++)	Understand the concept of Dynamic memory management, data types, algorithms, Big O notation
		Understand basic data structures such as arrays, linked lists, stacks and queues
		Describe the hash function and concepts of collision and its resolution methods
		Solve problem involving graphs, trees and heaps
		Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data

SCSPA21	Elective Course-Numerical Methods	Know how to solve various problems on numerical methods
		Use approximation to solve problems
		Differentiation and integration concept are applied
		Apply , direct methods for solving linear systems
		Numerical solution of ordinary differential equations
SCSPS21	Skill Enhancement Course-Office Automation	Possess the knowledge on the basics of computers and its components
		Gain knowledge on Creating Documents, spreadsheet and presentation.
		Learn the concepts of Database and implement the Query in Database.
		Demonstrate the understanding of different automation tools.
		Utilize the automation tools for documentation, calculation and presentation purpose.
SCSPS2P	Advanced Excel	Work with big data tools and its analysis techniques.
		Analyze data by utilizing clustering and classification algorithms.
		Learn and apply different mining algorithms and recommendation systems for large volumes of data.
		Perform analytics on data streams.
		Learn No-SQL databases and management.
Second Year – Semester-III		
SCSPC31	Python Programming	Learn the basics of python, Do simple programs on python, learn how to use an array.
		Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.
		Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.
		Work with List, tuples and dictionary, Write program using list, tuples and dictionary.
		Usage of File handlings in python, Concept of reading and writing files, Do programs using files
SCSPC3P	Python Programming Lab	Demonstrate the understanding of syntax and semantics of PYTHON language
		Identify the problem and solve using PYTHON programming techniques.
		Identify suitable programming constructs for problem solving.
		Analyze various concepts of PYTHON language to solve the problem in an efficient way.

		Develop a PYTHON program for a given problem and test for its correctness.
SCSPA31	Elective - Statistical Methods and its Application - I	Summarize the concepts of statistical methods
		Analyse the different Statistical measures of data
		Derive the marginal and conditional distributions of random variables, translate realworld problems into probability models
		To understanding the concepts of Probability of an event.
		Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
SCSPS3P	Skill Enhancement - PHP Programming	Write PHP scripts to handle HTML forms.
		Write regular expressions including modifiers, operators, and metacharacters.
		Create PHP Program using the concept of array.
		Create PHP programs that use various PHP library functions.
		Manipulate files and directories.
SCSPS31	Multimedia Systems	Understand the concepts, importance, application and the process of developing multimedia
		To have basic knowledge and understanding about image related processings
		To understand the framework of frames and bit images to animations
		Speaks about the multimedia projects and stages of requirement in phases of project.
		Understanding the concept of cost involved in multimedia planning, designing, and producing
Semester-IV		
SCSPC41	JAVA Programming	Understand the basic Object-oriented concepts.Implement the basic constructs of Core Java.
		Implement inheritance, packages, interfaces and exception handling of Core Java.
		Implement multi-threading and I/O Streams of Core Java.
		Implement AWT and Event handling.
		Use Swing to create GUI.
SCSPC4P	JAVA Programming Lab	Understand the basic Object-oriented concepts.Implement the basic constructs of Core Java.
		Implement inheritance, packages, interfaces and exception handling of Core Java.

		Implement multi-threading and I/O Streams of Core
		Implement AWT and Event handling.
		Use Swing to create GUI.
SCSPA41	Elective- Management Techniques	Resource
		To understanding the concepts of Development of OR
		Develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transshipment problems
		Solve the problems of Simplex Method
		To study the Duality Theorems
		Finding initial basic feasible and optimal solution of the Transportation problems
SCSPS4P	Skill Enhancement - Web Designing	Develop working knowledge of HTML
		Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).
		Ability to optimize page styles and layout with Cascading Style Sheets (CSS).
		Ability to develop a java script.
		An ability to develop web application using Ajax.
SCSPS41	Software Testing	Students learn to apply software testing knowledge and engineering methods
		Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.
		Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
		Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems
		Have an ability to use software testing methods and modern software testing tools for their testing projects.
Third Year - Semester-V		
SCSPC51	Software Engineering	Gain basic knowledge of analysis and design of systems
		Ability to apply software engineering principles and techniques
		Model a reliable and cost-effective software system
		Ability to design an effective model of the system
		Perform Testing at various levels and produce an efficient system.

SCSPC52	Database System Management	Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.
		Define the integrity constraints. Understand the basic concepts of Relational Data Model, Entity-Relationship Model.
		Design database schema considering normalization and relationships within database.
		Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.
		Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions
SCSPC5P	Database System Lab Management	Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.
		Define the integrity constraints. Understand the basic concepts of Relational Data Model, Entity- Relationship Model.
		Design database schema considering normalization and relationships within database. Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)
		Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.
		Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions.
SCSPA51	Elective - Operating Systems	Define the fundamentals of OS and identify the concepts relevant to process , process life cycle, Scheduling Algorithms, Deadlock and Memory management.
		Know the critical analysis of process involving various algorithms, an exposure to threads and semaphores
		Have a complete study about Deadlock and its impact over OS.
		Have complete knowledge of Scheduling Algorithms and its types.
		Understand memory organization and management
SCSPS51	Big Data Analytics	Work with big data tools and its analysis techniques.
		Analyze data by utilizing clustering and classification algorithms.
		Learn and apply different mining algorithms and recommendation systems for large volumes of data.
		Perform analytics on data streams.

		Learn NoSQL databases and management.
Semester-VI		
SCSPC61	Computer Networks	To Understand the basics of Computer Network architecture, OSI and TCP/IP reference models
		To gain knowledge on Telephone systems using wireless network.
		To understand the concept of MAC
		To analyze the characteristics of Routing and Congestion control algorithms
		To understand network security and define various protocols such as FTP, HTTP, Telnet, DNS
SCSPC62	.NET Programming	Develop working knowledge of C# programming constructs and the .NET Framework
		To develop a software to solve real-world problems using <u>ASP . NET</u>
		To Work On Various Controls Files.
		To create a web application using MicrosoftADO.NET.
		To develop web applications using XML
SCSPC6P	.NET Programming Lab	To create web applications and implement various controls.
		Create web pages in Rich control.
		Develop knowledge about file handling operations.
		An ability to design XML classes.
		To develop a software to solve real-world problems using ASP.NET
SCSPA61	Elective - Image Processing	Understand the fundamental concepts of digital image processing.
		Understand various 2D Image transformations
		Understand image enhancement processing techniques and filters
		Understand the classification of Image segmentation techniques
		Understand various image compression techniques
SCSPS61	Artificial Intelligence	Understand the various concepts of AI Techniques.
		Understand various Search Algorithm in AI.
		Understand probabilistic reasoning and models in AI.
		Understand Markov Decision Process.
		Understand various type of Reinforcement learning Techniques.
SCSPS6P	Skill Enhancement - Data	Acquire programming skills in core R Programming

	Analytics using R Lab	Acquire Object-oriented programming skills in R Programming.
		Develop the skill of designing graphical-user interfaces (GUI) in R Programming
		Acquire R Programming skills to move into specific branches

M.Sc. Computer Science

Programme Outcomes (Pos)

PO1: Problem Solving Skill

Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.

PO2: Decision Making Skill

Foster analytical and critical thinking abilities for data-based decision-making.

PO3: Ethical Value

Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.

PO4: Communication Skill

Ability to develop communication, managerial and interpersonal skills.

PO5: Individual and Team Leadership Skill

Capability to lead themselves and the team to achieve organizational goals.

PO6: Employability Skill

Inculcate contemporary business practices to enhance employability skills in the competitive environment.

PO7: Entrepreneurial Skill

Equip with skills and competencies to become an entrepreneur.

PO8: Contribution to Society

Succeed in career endeavors and contribute significantly to society.

PO 9: Multicultural competence

Possess knowledge of the values and beliefs of multiple cultures and a global perspective.

PO 10: Moral and ethical awareness/reasoning

Ability to embrace moral/ethical values in conducting one's life.

Programme Specific Outcomes (PSOs)

PSO1 – Placement

To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.

PSO 2 - Entrepreneur

To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.

PSO3 – Research and Development

Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.

PSO4 – Contribution to Business World

To produce employable, ethical and innovative professionals to sustain in the dynamic business world.

PSO 5 – Contribution to the Society

To contribute to the development of the society by collaborating with stakeholders for mutual benefit.

I – SEMESTER		
Course Code	Subject Name	Subject Outcomes
ECSPC11	Analysis & Design of Algorithms	Get knowledge about algorithms and determines their time complexity. Demonstrate specific search and sort algorithms using divide and conquer technique.
		Gain good understanding of Greedymethod and its algorithm.
		Able to describe about graphs using dynamic programming technique.
		Demonstrate the concept of backtracking & branch and bound technique.
		Explore the traversal and searching technique and apply it for trees and graphs.
ECSPC12	Object Oriented Analysis and Design & C++	Understand the concept of Object-Oriented development and modeling techniques
		Gain knowledge about the various steps performed during object design
		Abstract object-based views for generic software systems

		Link OOAD with C++ language
		Apply the basic concept of OOPs and familiarize to write C++ program
ECSPC1P	Python Programming Lab	Understand the basic concepts of Python Programming
		Understand Fileoperations,Classes and Objects
		Acquire Object Oriented Skills in Python
		Develop web applications using Python
		Develop Client Server Networking applications
ECSPT11	Advanced Software Engineering	Understand about Software Engineering process
		Understand about Software project management skills, design and quality management
		Analyze on Software Requirements and Specification
		Analyze on SoftwareTesting, Maintenance and Software Re-Engineering
		Design and conduct various types and levels of software quality for a software project
ECSPT1P	Algorithms and OOPs Lab	Underst and the concepts of object oriented with respect to C++
		Able to understand and implement OOPS concepts
		Implementation of datastructures like Stack, Queue,Tree,List using C++
		Application of the data structures for Sorting, Searching using different techniques.

II – SEMESTER

ECSPC21	Data Mining and Warehousing	Underst and the basic data mining techniques and algorithms
		Understand the Association rules,Clustering techniques and Datawarehousing contents
		Compare and evaluate different datamining techniques like classification, prediction,Clustering and association rule mining
		Design data warehouse with dimensional modeling and apply OLAP operations
		Identify appropriate data mining algorithms to solve real world problems
ECSPC22	Advanced Operating Systems	Understand the design issues associated with operating systems
		Master various process management concepts including scheduling, deadlocks and distributed file systems
		Prepare Real Time Task Scheduling
		Analyze Operating Systems for Hand held Systems
		Analyze Operating Systems like LINUX and iOS
ECSPC23	Advanced Java	Understand the advanced concepts of Java Programming

	Programming	Understand JDBC and RMI concepts
		Apply and analyze Java in Database
		Handle different event in java using the delegation event model, event listener and class
		Design interactive applications using JavaServlet, JSP and JDBC
ECST2P	Data Mining With WEKA and R Lab	Able to implement in weka using data mining concepts
		To understand the concepts of preprocessing.
		Implementation of association rule mining, classification and clustering using weka
		To implement the basic programs of R
		To import CSV data into R
ECSPT2Q	Advanced Java Programming Lab	Understand to the implement concepts of Java using HTMLforms,JSP & JAR
		Must be capable of implementing JDBC and RMI concepts
		Able to write Applets with Event handling mechanism
		To Create interactive web based applications using servlets and jsp
ECSPS21	Documentation using LaTeX	To learn BasicOperations
		To able to know Working with sampledocument
		Handling different Styles and Fonts in documents
		Handling different page numbering styles
		Working with Bibliography, Figures and Equations
III – SEMESTER		
ECSPC31	Digital Image Processing	Understand the fundamentals of Digital Image Processing
		Understand the mathematical foundations for digital image representation, image acquisition, image transformation, and image enhancement
		Apply, Design and Implement and get solutions for digital image processing problems
		Apply the concepts offiltering and segmentation for digital image retrieval
		Explore the concepts of Multi-resolution process and recognize the objects in an efficient manner
ECSPC32	Cloud Computing	Understand the concepts of Cloud and its services
		Collaborate Cloud for Event & Project Management
		Analyze on cloud in –WordProcessing, SpreadSheets, Mail, Calendar,Database
		Analyze cloud in social networks
		Explore cloud storage and sharing
ECSPC33	Network Security and Cryptography	Understand the process of the cryptographic algorithms
		Compare and apply differenten crypton and decryption techniques to solve problems related to confidentiality and authentication
		Applyandanalyzeappropriatesecuritytechniquestosolvenetworksecurity problem

		Explore suitable cryptographic algorithms
		Analyze different digital signature algorithms to achieve authentication and design secure applications
ECSPT3Q	Digital Image Processing Lab using MATLAB	To write programs in MATLAB for image processing using the techniques
		Toable to implement Image Enhancements & Restoration techniques
		Capable of using Compression techniques in an Image
		Must be able to manipulatethe image and Segment it
ECSPS21	Statistical Computing	To understand the concepts of Correlation
		To able to know the Regression Analysis
		To make understand the Probability Distribution and mathematical Expectation
		To know the Sampling and Sampling Distributions
		To understand the Statistical Inference
ECSPT3P	Multimedia Tools Lab	To understand the basic functionalities of pagemaker
		To Learningand working with coral DRAW
		To Learningand understanding the concept of the flash
		Learningand understanding the concept of the Photoshop
IV – SEMESTER		
ECSPC41	Big Data Analytics	Understand the building blocks of Big Data
		Articulate the programming aspects of cloud computing(map Reduce etc)
		Understand the specialized aspects of big data with the help of different big data applications
		Represent the analytical aspects of Big Data
		Know the recent research trends related to Hadoop File System, MapReduce and Google File System etc
ECSPC42	Internet Things of	Understand about IoT, its Architecture and its Applications
		Understand basic electronics used in IoT & itsrole
		Develop applications with Cusing Arduino IDE
		Analyze about sensors and actuators
		Design IoT in real tim eapplications using today’s internet & wireless technologies
ECSPC4P	Web Application Development and Hosting Practical	Understand & implement the basic HTML tags to create static webpages
		Capable of using hyperlinks, frames, images, tables, in a webpage
		Able to write dynamic web applications using HTML forms
		Must be able to write dynamic web applications in PHP & HTML tags using XAMPP.
ECSPT4P	Artificial Intelligence &	Demonstrate AI problems and techniques
		Understand machine learning concepts

	Machine Learning	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning
		Analyze the impact of machine learning on applications
		Analyze and design a real world problem for implementation and understand the dynamic behavior of a system