

Holy Cross College (Autonomous), Nagercoil
Kanyakumari District, Tamil Nadu.
Accredited with A⁺ by NAAC - IV cycle – CGPA 3.35
Affiliated to

Manonmaniam Sundaranar University, Tirunelveli



Semester I – IV
POs, PSOs & COs

DEPARTMENT OF COMPUTER SCIENCE



2023-2026

(With effect from the academic year 2024-2025)

Programme Educational Objectives (PEOs)

PEOs	Upon completion of B.A/B.Sc. degree programme, the graduates will be able to	Mission addressed
PEO 1	apply appropriate theory and scientific knowledge to participate in activities that support humanity and economic development nationally and globally, developing as leaders in their fields of expertise.	M1& M2
PEO 2	inculcate practical knowledge for developing professional empowerment and entrepreneurship and societal services.	M2, M3, M4 & M5
PEO 3	pursue lifelong learning and continuous improvement of the knowledge and skills with the highest professional and ethical standards.	M3, M4, M5 & M6

Programme Outcomes (POs)

POs	Upon completion of B.Sc. Degree Programme, the graduates will be able to:	Mapping with PEOs
PO1	obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science.	PEO 1
PO2	create innovative ideas to enhance entrepreneurial skills for economic independence.	PEO2
PO3	reflect upon green initiatives and take responsible steps to build a sustainable environment.	PEO 2
PO4	enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental career.	PEO 1 & PEO 3
PO5	communicate effectively and collaborate successfully with peers to become competent professionals.	PEO 2 & PEO 3
PO6	absorb ethical, moral and social values in personal and social life leading to highly cultured and civilized personality	PEO 2 & PEO 3
PO7	participate in learning activities throughout life, through self-	PEO 1 &

	paced and self-directed learning to develop knowledge and skills.	PEO 3
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Programme Specific Outcomes (PSOs)

PSOs	Upon completion of the B.Sc. Computer Science Programme, the graduates will be able to:	Mapping with POs
PSO – 1	obtain sufficient knowledge and skills enabling them to undertake further studies in computer science and its allied areas on multiple disciplines linked with computer science.	PO1
PSO – 2	evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems	PO2
PSO – 3	develop a range of generic skills helpful in team building, problem solving, technical ability, employment, internships, communication and societal activities.	PO4 & PO7
PSO – 4	communicate effectively, work collaboratively, and demonstrate ethical and professional attitudes in diverse settings.	PO5 & PO6
PSO – 5	sensitize various economic issues related to development, growth, international economics, sustainable development and environment	PO3

COURSE OUTCOMES

SEMESTER I

CORE COURSE I: PYTHON PROGRAMMING

Course Code: SU241CC1

On the successful completion of the course, student will be able to:		
1.	recall python syntax, basic structures and control flow statements	K1
2.	understand to analyze and debug python code	K2
3.	write python scripts to solve specific problems	K3
4.	apply python in creating simple applications or scripts for automation	K3
5.	create reusable python modules or packages for broader use	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K6**-Create

SEMESTER I

CORE LAB COURSE I: PYTHON PROGRAMMING LAB

Course Code: SU231CP1

On the successful completion of the course, student will be able to:		
1.	remember fundamental python syntax and basic data types, and understand the concepts.	K1&K2
2.	understand the functionality and purpose of control structures and apply the concepts to identify patterns and relationships.	K2&K3
3.	understand the purpose of functions, database and apply this to solve problems.	K2&K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER I

ELECTIVE COURSE I: NUMERICAL METHODS

Course Code: SU231EC1

On the successful completion of the course, student will be able to:		
1.	remember the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for computer problems.	K1 & K2
2.	understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K2 & K4
3.	apply this to solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with software applications.	K3 & K5
4.	analyze direct methods for solving linear systems.	K4 & K5
5.	evaluate methods for solving first and second order ordinary differential equations.	K3 & K5

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER I
NON MAJOR ELECTIVE NME I: OFFICE AUTOMATION

Course Code: SU231NM1/ SU241NM1

On the successful completion of the course, student will be able to:		
1.	remember the fundamentals and understand the concepts.	K1&K2
2.	understand the functionality and purpose of commands and apply the concepts.	K2&K3
3.	understand the purpose of functions, database and apply this to solve problems.	K2&K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER I
FOUNDATION COURSE (FC): PROBLEM SOLVING TECHNIQUES

Course Code: SU231FC1

On the successful completion of the course, student will be able to:		
1	know the approach and algorithms to solve specific fundamental problems.	K1
2	understand the systematic approach to problem solving.	K2
3	apply the efficient methods to solve specific problems related to text processing	K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER I
SPECIFIC VALUE ADDED COURSE I: PROCEDURAL LANGUAGE

Course Code: SU231V01

On the successful completion of the course, student will be able to:		
1.	remember the basic fundamentals of C and understand the concepts.	K1& K2
2.	understand the functionality and purpose of control structures and apply the concepts in programming.	K2 & K3
3.	understand the various programming constructs and implement it to perform specific task.	K2 & K3

K1 - Remember; K2 - Understand; K3 – Apply

SEMESTER I
SPECIFIC VALUE ADDED COURSE II: UPGRADING AND REPAIRING PCS
Course Code: SU231V02

On the successful completion of the course, students will be able to:		
1.	understand PC development, components, and system design principles comprehensively.	K1&K2
2.	apply skills in building, upgrading, diagnosing, and maintaining PC systems adeptly.	K3
3.	analyze processor types, specifications, upgrades, and troubleshooting methods effectively.	K4
4.	evaluate motherboard components, buses, BIOS, and selection criteria proficiently.	K5
5.	examine memory types, performance, upgrades, and troubleshooting techniques thoroughly.	K5

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** – Analyze; **K5** - Evaluate

SEMESTER-I
SPECIFIC VALUE-ADDED COURSE III: ROBOTICS AND ITS APPLICATIONS
Course Code: SU231V03

On the successful completion of the course, students will be able to:		
1.	classify the various sensors used in robots for better performance.	K1
2.	summarize various industrial and non-industrial applications of robots.	K2
3.	list and explain the basic elements of industrial robots.	K2
4.	utilize sensors and actuators to develop robotic systems capable of interacting with the environment and responding to stimuli.	K3
5.	analyse robot kinematics and its control methods.	K4

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** – Analyze;

SEMESTER II
CORE COURSE II: DATA STRUCTURE AND ALGORITHMS
Course Code: SU242CC1

On the successful completion of the course, students will be able to:
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1.	define data structure and algorithms	K1
2.	describe data structures like stack, queue, tree and graph	K2
3.	apply data structures in solving the problems	K2&K3
4.	use algorithm techniques for solving problems and analyze the time complexity of algorithms.	K3&K4
5.	assess various algorithmic techniques and analyze the applications of the algorithm.	K4&K5

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5** - Evaluate

SEMESTER II

CORE LAB COURSE II: DATA STRUCTURE AND ALGORITHMS LAB

Course Code: SU232CP1

On the successful completion of the course, student will be able to:		
1.	remember and implement basic data structures linked lists, stacks, queues, trees, graphs.	K1 & K3
2.	understand and implement sorting algorithms like bubble, merge, quick sort	K2 & K3
3.	applying hash tables and resolving collisions.	K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER II

ELECTIVE COURSE II: DISCRETE MATHEMATICS

Course Code: SU232EC1

On the successful completion of the course, student will be able to:		
1.	remember the basic concepts of permutations, combinations, relations and graphs	K1 & K2
2.	understand the basic concepts of functions and relations.	K2
3.	apply basic counting techniques to solve combinatorial problems.	K3 & K5
4.	represent discrete objects and relationships using abstract mathematical structures	K4 & K5

5.	apply graphs in a wide variety of models	K3 & K5
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K1 - Remember; K2 - Understand; K3 – Apply; K4 - Analyze; K5 - Evaluate

SEMESTER II

NON MAJOR ELECTIVE NME II: INTRODUCTION TO HTML

Course Code: SU232NM1/ SU242NM1

On the successful completion of the course, student will be able to:		
1.	recall and recognize HTML tags and their syntax.	K1& K2
2.	understand the use of HTML elements like headings, paragraphs, lists and links.	K2
3.	apply the concepts in creating web pages and formatting it.	K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER II

SKILL ENHANCEMENT COURSE SEC - I: ADVANCED EXCEL

Course Code: SU232SE1

On the successful completion of the course, student will be able to:		
1.	use a wide range of advanced excel functions.	K1
2.	understand data validation rules to control data entry	K2
3.	presenting data in the form of charts and graphs.	K3

K1 - Remember; K2 - Understand; K3 - Apply

SEMESTER I & II

LIFE SKILL TRAINING I: CATECHISM

Course Code: UG232LC1

Upon completion of this course the students will be able to		
1	understand the aim and significance of value education	K1,K2
2	develop individual skills and act confidently in the society	K3
3	learn how to live lovingly through family values	K3
4	enhance spiritual values through strong faith in God	K6
5	learn good behaviours through social values	K6

K1 - Remember K2-Understand; K3-Apply; K6- Create

SEMESTER I & II
LIFE SKILL TRAINING I: MORAL
Course Code: UG232LM1

Upon completion of this course the students will be able to:		
1	understand the aim and significance of value education	K1,K2
2	develop individual skills and act confidently in the society	K3
3	learn how to live lovingly through family values	K3
4	enhance spiritual values through strong faith in God	K6
5	learn good behaviours through social values	K6

K1 - Remember **K2**-Understand; **K3**-Apply; **K6**- Create

SEMESTER III
CORE COURSE III: PROGRAMMING IN JAVA
Course Code: SU233CC1

On the successful completion of the course, students will be able to:		
1.	demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords	K1&K2
2.	understand the process of graphical user interface design and implementation using AWT or swings	K1&K4
3.	use multithreading concepts to develop inter process communication.	K2&K3
4.	demonstrate the behaviour of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.	K2&K4
5.	develop applets that interact abundantly with the client environment and deploy on the server	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** – Create

SEMESTER III
CORE LAB COURSE III: PROGRAMMING IN JAVA LAB
Course Code: SU233CP1

On the successful completion of the course, students will be able to:		
1.	recall the concepts of object oriented programming such as inheritance, encapsulation and polymorphism in java	K1
2.	describe the purpose -and usage of exception handling mechanisms in java.	K2
3.	develop and analyse java programs to solve specific problems or implement algorithms using appropriate data structures.	K3,K4
4.	evaluate java program using Error handling technique	K5
5.	create applet program to implement window based activities	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5**- Evaluate, **K6** – Create

SEMESTER III

ELECTIVE COURSE III: WEB TECHNOLOGY

Course Code: SU233EC1

On the successful completion of the course, students will be able to:		
1.	recall html tags, css properties, and javascript syntax	K1
2.	explain the relationship between html, css and javascript in web development.	K2
3.	create well-structured web pages using html and css	K3
4.	analyse and evaluate different frameworks and libraries for specific project requirements	K4,K5
5.	design and implement responsive web layouts that adopt to various screen sizes and devices	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

SEMESTER III

ELECTIVE LAB COURSE I: WEB TECHNOLOGY LAB

Course Code: SU233EP1

On the successful completion of the course, students will be able to:		
1.	recall the basic components and technologies used in web development, such as html, css and javascript.	K1

2.	understand and apply css definitions for document presentation.	K2
3.	build interactive page using html	K3
4.	identify, formulate and analyze problems as well as identify the computing requirements appropriate to their solutions.	K4
5.	develop dynamic web pages using client side programming and server side programming.	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** – Create

SEMESTER III

SKILL ENHANCEMENT COURSE II: PROGRAMMING IN PHP

Course Code: SU233SE1

On the successful completion of the course, students will be able to:		
6.	recall and apply PHP syntax to solve programming problems.	K1, K3
7.	interpret and analyze PHP code and explain its behaviour.	K2,K4
8.	apply PHP scripts to perform specific tasks, such as form processing or database manipulation.	K3
9.	manipulate files, sessions and cookies deploy	K3
10.	create PHP programs that use various PHP library functions	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** – Create

SEMESTER III / IV

SKILL ENHANCEMENT COURSE SEC III: FITNESS FOR WELLBEING

Course Code: UG23CSE1

On the successful completion of the course, student will be able to:		
1	know physical, mental, and social aspects of health	K1
2	understand holistic health and the role of physical fitness.	K2
3	apply mindfulness and yoga for stress management and mental clarity.	K3
4	implement proper personal hygiene practices for cleanliness and disease prevention.	K3
5	evaluate and implement right nutritional choices.	K5

K1-Remember; K2-Understand; K3-Apply; K5-Evaluate

SEMESTER III
SPECIFIC VALUE ADDED COURSE I: ADOBE INDESIGN CS4
Course Code: SU233V01

On the successful completion of the course, students will be able to:		
1.	master indesign CS4 interface for efficient document creation.	K1&K2
2.	create, format, and publish documents using advanced features.	K2
3.	apply text formatting, styles, and alignment techniques effectively.	K3&K4
4.	prepare documents for printing and export to PDF.	K3&k6
5.	use drawing tools, transform objects, and manage document layout.	K4

K1 - Remember; K2 - Understand; K3 – Apply; K4 - Analyze; K6 – Create

SEMESTER III
SPECIFIC VALUE ADDED COURSE II: FLUTTER
Course Code: SU233V02

On the successful completion of the course, students will be able to:		
1.	build simple flutter application using simple widgets and layouts	K1&K4
2.	explain flutter applications using dart packages	K2
3.	install flutter in android studio.	K3
4.	construct flutter application using database	K6
5.	build animation on flutter	K6

K1 - Remember; K2 - Understand; K3 – Apply; K4 – Analyze;K6 - Create

SEMESTER III
SPECIFIC VALUE ADDED COURESE III: 2D ANIMATION USING PIVOT
ANIMATOR
Course Code: SU233V03

On the successful completion of the course, students will be able to:		
1	understand the software layout and controls.	K1&K2
2	learn to create and modify figures for animation.	K2

3	master in between, onion skinning, and auto-easing.	K3&K4
4	utilize multi-figure selection, backgrounds, and text objects.	K4
5	learn to export animations in various formats.	K3&K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** – Analyze;**K6** - Create

SEMESTER III /V

SELF LEARNING COURSE I: ADOBE ILLUSTRATOR CS4

Course Code: SU233SL1/ SU235SL1

On the successful completion of the course, students will be able to:		
1.	recall key features and tools of adobe illustrator and explain the purpose and significance of vector graphics in design.	K1 & K2
2.	apply color theory principles to create visually appealing illustrations and designs	K3
3.	analyze and troubleshoot common issues encountered during illustrator project	K4
4.	assess personal growth and skill development in using adobe illustrator	K4
5.	synthesis design concepts and ideas into cohesive and visually appealing compositions using adobe illustrator	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5** - Evaluate; **K6** – Create

SEMESTER IV

CORE COURSE IV: .NET PROGRAMMING

Course Code: SU234CC1

On the successful completion of the course, students will be able to:		
1.	identify and understand the basic syntax and language constructs of C# and .NET framework	K1 & K2
2.	develop console applications using C# to solve simple programming problems.	K3
3.	analyze existing .NET codebases to understand their structure, dependencies, and design patterns.	K4
4.	analyze C# programming techniques in developing web applications.	K4

5.	create web application using various controls.	K6
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K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** – Create

SEMESTER IV

CORE LAB COURSE IV: .NET PROGRAMMING

Course Code: SU234CP1

On the successful completion of the course, students will be able to:		
1.	identify and understand the basic syntax and language constructs of C# and .NET framework	K1 & K2
2.	develop console applications using C# to solve simple programming problems.	K3
3.	analyze existing .NET codebases to understand their structure, dependencies, and design patterns.	K4
4.	analyze C# programming techniques in developing web applications.	K4
5.	create web application using various controls.	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** - Create

SEMESTER IV

ELECTIVE COURSE IV: SOFTWARE ENGINEERING

Course Code: SU234EC1

On the successful completion of the course, students will be able to:		
1.	recall fundamental concepts and principles of software engineering, including software development life cycle models, requirements engineering, and software design patterns.	K1
2.	understand the principles of software testing, including test planning, test case design, and test execution.	K2
3.	apply requirements engineering techniques to gather, analyze, and document software requirements for a given project.	K3

4.	analyze software requirements documents to identify inconsistencies, ambiguities, and conflicts.	K4
5.	create comprehensive test plans, test cases, and test scripts to ensure the quality and reliability of software systems.	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K6** – Create

SEMESTER III / IV
SKILL ENHANCEMENT COURSE SEC IV: DIGITAL FLUENCY
Course Code: UG23CSE2

On the successful completion of the course, students will be able to:		
1.	work with text, themes and styles	K1
2.	produce a mail merge	K2
3.	secure information in an Excel workbook	K2
4.	perform documentation and presentation skills	K2, K3
5.	add special effects to slide transitions	K3

K1 - Remember; **K2** - Understand; **K3** – Apply

SEMESTER IV
ENVIRONMENTAL STUDIES
Course Code: UG234EV1

On the successful completion of the course, students will be able to:		
1.	know the different kinds of resources, pollution and ecosystems	K1
2.	understand the biodiversity and its constituents	K2
3.	use the methods to control pollution and, to conserve the resources and ecosystem	K3
4.	analyse the factors behind pollution, global warming and health effects for sustainable development	K4
5.	evaluate various water, disaster and waste management systems	K5

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyse; **K5** - Evaluate

SEMESTER IV/VI
SELF LEARNING COURSE II: WEB ANIMATION
Course Code: SU234SL1/ SU236SL1

On the successful completion of the course, students will be able to:		
1.	remember and understand HTML structure, tags, and saving web pages.	K1 & K2
2.	utilize CSS for image styling and text wrapping.	K3
3.	analyse and create various types of hyperlinks and use CSS.	K3 & K4
4.	learn and evaluate pose-to-pose sketching, rapid sketching, and basic acting.	K4 & K5
5.	develop master pencil shading, textures, landscapes, and human anatomy.	K6

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create

SEMESTER III & IV
LIFE SKILL TRAINING II: MORAL
Course Code: UG234LM1

On the successful completion of the course, students will be able to:		
1	know the significance of life	K1
2	understand the importance of self-care	K2
3	realise the duty of youngsters in the society and live up to it	K3
4	analyse how to achieve success in profession	K4
5	develop mystical values by inculcating good thoughts	K5

K1 - Remember; **K2** - Understand; **K3** – Apply; **K4** - Analyze; **K5** – Evaluate