

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 & II
POs, PSOs & COs

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE
& DATA SCIENCE**



2024-2027
(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:	PEOs addressed
PO 1	obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science.	PEO 1
PO 2	create innovative ideas to enhance entrepreneurial skills for economic independence.	PEO 2
PO 3	reflect upon green initiatives and take responsible steps to build a sustainable environment.	PEO 2
PO 4	enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental career.	PEO 1 & PEO 3
PO 5	communicate effectively and collaborate successfully with peers to become competent professionals.	PEO 2 & PEO 3
PO 6	absorb ethical, moral and social values in personal and social life leading to highly cultured and civilized personality	PEO 2 & PEO 3
PO 7	participate in learning activities throughout life , through self-paced and self-directed learning to develop knowledge and skills.	PEO 1 & PEO 3

Programme Specific Outcomes (PSOs)

PSOs	Upon completion of the B.Sc. Artificial Intelligence and Data Science, the graduates will be able to:	Mapping with POs
PSO – 1	evolve AI and Data Science based domain knowledge and skills to pursue advanced studies in the field and integrate these techniques with emerging technologies.	PO 1
PSO - 2	develop innovative ideas in AI and data science to enhance entrepreneurial and employability skills for real-world challenges.	PO 2
PSO – 3	cultivate versatile skills for problem-solving, technical proficiency, effective communication, and community engagement through self-directed activities.	PO 4 & PO 7
PSO - 4	communicate and collaborate proficiently to become competent AI professionals, while addressing biases, and upholding data privacy regulations.	PO 5 & PO 6
PSO - 5	reflect on green initiatives and leverage AI to address economic challenges while promoting sustainable development.	PO 3

Mapping of PO'S and PSO'S

POs	PSO1	PSO 2	PSO3	PSO4	PSO5
PO 1	M	S	S	S	S
PO 2	S	M	S	S	S
PO 3	M	S	S	S	M
PO4	S	S	M	S	S
PO5	S	M	S	M	S
PO6	M	S	S	M	S
PO7	S	S	M	S	S

COURSE OUTCOMES

SEMESTER I

CORE COURSE I: PROGRAMMING FOR PROBLEM SOLVING

Course Code: IU241CC1

On the successful completion of the course, students will be able to:		
1.	remember the fundamentals of C programming and describe the program development process.	K1&K2
2.	prepare solutions for problems using branching and looping statements.	K3
3.	decompose a problem into functions and synthesize a complete program using divide and conquer approach.	K3
4.	formulate algorithms and programs using arrays, pointers and structures	K3
5.	analyse various programming constructs and structures.	K4

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

SEMESTER I

CORE LAB COURSE I: PROBLEM SOLVING USING C LAB

Course Code: IU241CP1

On the successful completion of the course, students will be able to:		
1.	translate given algorithms to a working and correct program.	K2&K3
2.	identify and correct logical errors encountered at run time.	K2&K3
3.	create iterative as well as recursive programs.	K6
4.	represent data in arrays, strings and structures and manipulate them through a program.	K2&K3
5.	declare pointers of different types and use them in defining self-referential structures.	K2&K3

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

SEMESTER I
ELECTIVE COURSE I: MATHEMATICAL FOUNDATIONS FOR ARTIFICIAL
INTELLIGENCE
Course Code: IU241EC1

On the successful completion of the course, students will be able to:		
1.	understand the basics of computers and the number conversions	K1 & K2
2.	analyse and evaluate logical arguments and statements using formal logical principles.	K4 & K5
3.	acquire knowledge of lattice structures and Boolean algebra, including the application of Boolean algebra laws and the principle of duality to solve logical problems.	K2 & K3
4.	understand the basic concepts of set theory and relations including inclusion-exclusion principles, types of relations and demonstrate the ability to apply these concepts in problem-solving.	K2 & K3
5.	To learn various methods to solve algebraic and transcendental equations.	K1 & K2

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

SEMESTER I
NON-MAJOR ELECTIVE NME I: CYBER FORENSICS
Course Code: IU241NM1

On the successful completion of the course, students will be able to:		
1.	recall and describe the definition of computer forensics fundamentals.	K1 & K2
2.	apply and analyze the different types of computer forensics technology.	K4
3.	analyse various computer forensics systems.	K4
4.	apply the methods for data recovery, evidence collection and data seizure.	K3
5.	gain knowledge of duplication and preservation of digital evidence.	K1

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

SEMESTER I
FOUNDATION COURSE: WEB DESIGNING
Course Code: IU241FC1

On the successful completion of the course, students will be able to:		
1.	understand and identify the elements and attributes in a web page.	K1&K2

2.	design web pages using DHTML and Cascading StyleSheets.	K3
3.	design and construct web sites using tables.	K3
4.	apply the attributes in designing web pages	K3
5.	analyze a web page and identify its elements and attributes.	K4

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

SEMESTER I
SPECIFIC VALUE-ADDED COURSE I: OBJECT ORIENTED CONCEPTS
Course Code: IU241V01

On the successful completion of the course, students will be able to:		
1.	define object-oriented programming terminology and describe basic programming constructs.	K1&K2
2.	illustrate object relationships.	K2
3.	analyze code for OOP principles.	K4
4.	compare different OOP designs.	K4
5.	develop basic object-oriented programs.	K3

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

SEMESTER I
SPECIFIC VALUE-ADDED COURSE I: PROGRAMMING USING JAVA
Course Code: IU241V02

On the successful completion of the course, students will be able to:		
1.	recall and describe the object-oriented programming concepts in JAVA.	K1&K2
2.	apply the relevant object-oriented concepts to implement a real time application with design patterns.	K3
3.	demonstrate the application of polymorphism in various ways.	K2
4.	illustrate the use of inheritance, exceptions, generics and collection.	K2
5.	develop applications with event-driven graphical user interface and file management.	K3

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

SEMESTER I

SPECIFIC VALUE-ADDED COURSE I: SYSTEM SOFTWARE AND OPERATING SYSTEMS

Course Code: IU241V03

On the successful completion of the course, students will be able to:		
1.	recall the fundamental principles of system software and define the CPU scheduling algorithms.	K1
2.	demonstrate role and functioning of compilers, interpreters, loaders, and linkers in the translation of high-level code to machine code and management of program execution.	K2
3.	explain the concepts of deadlock characterization and the various methods for handling deadlocks in operating systems.	K2
4.	apply their knowledge of memory management techniques, to solve memory allocation problems, and to design and implement basic operating system functionalities.	K3
5.	analyze the performance implications of different CPU scheduling algorithms and assess their impact on system performance and user experience.	K4

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

**SEMESTER II
CORE COURSE II: PYTHON PROGRAMMING
Course Code: IU242CC1**

On the successful completion of the course, students will be able to:		
1.	remember fundamental python syntax and basic data types, and understand the concepts.	K1&K2
2.	analyze and apply functions, control statements, strings, lists and dictionaries in python programming	K3&K4
1.	demonstrate the concept of object, class inheritance and polymorphism in Python.	K2
2.	apply user defined functions and classes in python.	K3
3.	develop programming skills to solve real time computational problems	K3

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

**SEMESTER II
CORE LAB COURSE II: PYTHON PROGRAMMING LAB**

Course Code: IU242CP1

On the successful completion of the course, students will be able to:		
1.	remember fundamental python syntax and basic data types, and describe the concepts.	K1&K2
2.	analyze and apply functions, control statements, strings, lists and dictionaries in python programming	K3&K4
3.	demonstrate the concept of object, class inheritance and polymorphism in Python.	K2
4.	apply user defined functions and classes in python.	K3
5.	develop programming skills to solve real time computational problems	K3

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

SEMESTER II
ELECTIVE COURSE II: DISCRETE MATHEMATICS
Course Code: IU242EC1

On the successful completion of the course, student will be able to:		
1.	gain a deep understanding of functions and their role in problem solving.	K1 & K2
2.	understand the basic principles of counting, including the product, sum rules, and apply combinatorial techniques to solve problems in various contexts.	K2 & K3
3.	acquire knowledge of the theory of probability and multiplication law of probability.	K1 & K2
4.	apply the concept of Baye’s theorem and compute mathematical expectation.	K2 & K3
5.	design and implement graph-based solutions to AI problems using appropriate data structures and algorithms.	K2 & K3

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

SEMESTER II
NON-MAJOR ELECTIVE NME II: UNDERSTANDING INTERNET
Course Code: IU242NM1

On the successful completion of the course, students will be able to:		
1.	understand the basic concept of network and HTML.	K1 & K2
2.	understand the basics of WWW and web browsers.	K2 & K3

3.	describe the security hash function and concepts of security methods.	K2 & K3
4.	solve problems involving malware.	K3 & K4
5.	apply algorithm for secure network.	K2 & K3

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

SEMESTER II
SKILL ENHANCEMENT COURSE I SEC1: QUANTITATIVE APTITUDE

Course Code: IU242SEC1

On the successful completion of the course, students will be able to:		
1.	understand the basic concepts of numbers.	K1&K2
2.	apply the concept of percentage, profit and loss.	K3
3.	solve problems using distance and time.	K3
4.	analyze the concepts of discount and probability.	K4
5.	solve the problems easily with short cut methods.	K3

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

SEMESTER I & II
LIFE SKILL TRAINING I: CATECHISM
Course Code:UG242LC1

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:UG242LM1

Upon completion of this course the students will be able to:		
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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