

**ST. JOSEPH'S COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)
CUDDALORE-1.**



PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Artificial Intelligence

SYLLABUS

2024-2027

ODD SEMESTER – MAY 2024

B.Sc. ARTIFICIAL INTELLIGENCE

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

CURRICULUM TEMPLATE (2024 – 2027)

B.Sc. Artificial Intelligence

SEMESTER – I

S.No.	Part		Hours/ Week	Credit	Course Code	Course Title	Maximum Marks		
							CIA	ESE	TOTAL
1	I	Language -1	4	3	21LT01	Tamil-I/Hindi-I/French-I	25	75	100
2	II	English - 1	4	3	LE101C	Communicative English - I	25	75	100
3	III	Core Theory - 1	5	3	AI101	Programming in C	25	75	100
4	III	Core Theory - 2	5	3	AI102	Data Structure & Algorithms	25	75	100
5	III	Core Practical – 1	3	2	AIP101	Practical - Programming in C Lab	40	60	100
6	III	Allied-1	6	6	AMAI11	Discrete Mathematics	25	75	100
7	IV	SEC - 1	3	2	VE101A	Value Education	25	75	100
Semester Total			30	22			190	510	700

SEMESTER – II

S.No.	Part		Hours/ Week	Credit	Course Code	Course Title	Maximum Marks		
							CIA	ESE	TOTAL
8	I	Language -2	4	3	21LT02	Tamil-II/Hindi-II/French-II	25	75	100
9	II	English – 2	4	3	LE202C	Communicative English - II	25	75	100
10	III	Core Theory – 3	5	4	AI203	Python Programming	25	75	100
11	III	Core Theory – 4	5	3	AI204	Introduction to Artificial Intelligence	25	75	100
12	III	Core Practical – 2	3	2	AIP202	Practical – Python Programming Lab	40	60	100
13	III	Allied -2	5	5	AMAI22	Operations Research	25	75	100
14	III	Naan Mudhalvan	2	2	EFE202	Effective English	100	-	100
15	IV	SEC – 2	2	2	EPD201A	Basic Tamil / Dynamics of Personality	25	75	100
Semester Total			30	24			290	510	800

PROGRAMME OUTCOME (PO)

PO1: The students find their footings in life through wholesome and integral education.

PO2: The students are encouraged to climb the academic ladder by pursuing Post Graduate Education in different domain.

PO3: The students are academically and technically equipped to steer the Nation along the path of progress and peace

PO4: The students are trained to be Employable and Entrepreneurial Citizen of the Nation.

PO5: The students are fortified intellectually, ethically and socially to face the challenges in life.

PROGRAMME SPECIFIC OUTCOME(PSO)

PSO1 : Leverage the technical expertise and critical thinking abilities specific to the domain of artificial intelligence to devise solutions for complex and challenging problems.

PSO2 : Create and implement research-driven solutions for intricate challenges in the artificial intelligence industry, taking into account public health, safety, cultural, societal, and environmental factors.

PSO3 : Develop the ability to listen, read, and proficiently communicate complex ideas, tailored to the needs and abilities of diverse audiences.

PSO4 : Generate innovative ideas to spark new business ventures in the hospitality industry.

PSO5 : Showcase comprehensive domain knowledge and consistently complete assigned tasks effectively and efficiently, adhering to the highest quality standards expected of an Artificial Intelligence.

I B.Sc. (AI)	PROGRAMMING IN C For the students admitted from the year 2024	AI101
SEMESTER – I		HRS/WK-5
CORE – I		CREDIT – 3

Course Objectives

To understand simple algorithms, language constructs and develops programming skills in C.

Course Outcomes

- CO1 :** To understand the concepts of Constants, Variables and Data Types, Operators and Expressions.
- CO2 :** To understand the concepts of Managing Input and Output Operations, DecisionMaking and Branching, Decision Making and Looping.
- CO3 :** To understand the concepts of Arrays, Character Arrays and Strings, User DefinedFunctions.
- CO4 :** To understand the concepts of Structure and Unions, Pointers, File Management in C.
- CO5 :** The student will be able to understand the concepts fundamental algorithms, Factoring Methods.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: AI101					TITLE OF THE PAPER: PROGRAMMING IN C					HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	4	3	4	4	3	4	4	3.6	
CO2	4	4	4	4	4	3	4	3	3	4	3.7	
CO3	4	4	3	3	4	4	4	3	4	4	3.7	
CO4	4	4	3	3	4	4	3	3	4	3	3.5	
CO5	4	3	4	3	3	4	4	4	4	4	3.7	
Mean Overall Score											3.6	

Result: The Score of this Course is 3.6(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT I: OVERVIEW OF C

[18 Hrs]

History – Sample Programs – Basic Structure – Programming Style - Executing – **Constants, Variables, and Data Types:** Character Set – C Token – Keyword and Identifiers – Constants – Variables – Data Types – Declaration of Storage Class – Assigning Values to Variables – Defining Symbolic Constants – Declaration – **Operators and Expressions:** Arithmetic, Relational, Logical, Assignment, Increment and Decrement, Conditional, Bitwise, Special Operators – Arithmetic Expressions, Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity – Mathematical Functions .

UNIT II: MANAGING INPUT AND OUTPUT OPERATIONS

[18 Hrs]

Reading, Writing a Character – Formatted Input, Output - **Decision Making and Branching:** Decision Making with If statement – Simple If Statement – The If...Else Statement – Nesting of If...Else Statements – The Else If Ladder – The Switch Statement- The ?: Operator – The Goto Statement - **Decision Making and Looping:** The while Statement – The do Statement – The for Statement – Jumps in Loops.

UNIT III: ARRAYS AND FUNCTIONS

[18 Hrs]

One-Dimensional Arrays - Declaration, Initialization of One-Dimensional Arrays – Two-Dimensional Arrays - Initializing Two-Dimensional Arrays – Multi-Dimensional Arrays.

User Defined Functions: – Definition of Functions – Return Values and Their Types – Function Calls – Function Declaration – Category of Functions – No Arguments and No Return Values – Arguments but no return values – Arguments with Return Values – No Arguments but Returns a value – Functions that Return Multiple Values – Nesting of Functions – Recursion –The Scope, Visibility and Lifetime of Variables.

UNIT IV : STRUCTURE AND UNIONS

[18 Hrs]

Defining a Structure – Declaring Structure Variables – Accessing Structure Members – Structure Initialization – Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions

UNIT V: POINTERS AND FILE MANAGEMENT IN C

[18 Hrs]

POINTERS: Understanding Pointers – Accessing the Address of Variable – Declaring, Initialization of Pointer Variables – Accessing a Variable through its pointer.

FILE MANAGEMENT IN C: Defining and Opening a File – Closing a File – Input/Output Operations on File – Error Handling during I/O Operations.

Textbooks:

1. Programming in ANSI C, E. Balagurusamy, Tata McGrawhill Education, 6th Edition, 2013. (Unit I to IV)
2. How to Solve it by Computer, R.G.Dromey, PHI International (Unit V)

Reference Books:

1. The C Programming Language (ANSI C), Kernighan, B.W. and Ritchie, D.M., PHI.
2. C by Discovery , Foster & Foster , Penram International Publishers, Mumbai.

Course Material:
E-References

1. NPTEL, Introduction to C Programming, Prof. Satyadev Nandakumar, IIT, Computer Science and Engineering Kanpur.
2. NPTEL, Introduction to Problem Solving & Programming, by Prof. Deepak Gupta Department of Computer Science and Engineering IIT Kanpur.

I B.Sc. (AI)	DATA STRUCTURE AND ALGORITHMS	AI102
SEMESTER – I		HRS/WK-5
CORE – II		CREDIT – 3

Objective:

To Understand the fundamentals of Data Structures and its algorithms.

Course Outcomes(COs):

- CO1 :** To understand the Fundamental concepts in Data Structure and Arrays Structure.
- CO2 :** To Learn the Stack and Queue operations and applications.
- CO3 :** : To learn basics of graph and gain working knowledge about shortest path.
- CO4 :** Ability to understand the Basic Traversal and Search Techniques.
- CO5 :** Ability to Work with Greedy method.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE : AI102					COURSE TITLE: DATA STRUCTURE AND ALGORITHMS					HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	4	2	2	4	3.6	
CO2	4	4	4	4	4	4	4	2	2	4	3.6	
CO3	4	4	4	3	4	4	4	2	2	4	3.5	
CO4	4	4	4	4	4	3	4	2	2	4	3.5	
CO5	4	4	4	4	3	4	4	2	2	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT I

[15 hrs]

Introduction to Data structure: Definition of a Data structure - Primitive and Composite Data Types- Difference between Primitive and Composite Data Type-Arrays – Types of arrays – Advantage and disadvantage of an array- Operations on Arrays.

UNIT II

[15 hrs]

Stacks and Queues: Stacks – Definition - Operation – Push Operation – Pop Operation -Application of Stack - Infix to Postfix Conversion - Queues- Operations on Queues- Enqueue Operation – Dequeue Operation – Application of Queue.

UNIT III

[15 hrs]

Linked List : Singly Linked List – Operations on Singly linked list – Create Operation – Insert Operation – Delete Operation – Application of Linked List - Polynomial addition using Singly Linked List - Doubly Linked List – Operations on double linked list - Create Operation – Insert Operation – Delete Operation.

UNIT IV

[15 hrs]

Binary Tree Traversal and Graphs: Binary trees – Representation of Binary tree – Binary Tree Traversals – Inorder – Preorder – Postorder. **Graphs:** Definition – Types of Graphs - Graph Representation - Terminologies of a graph.

UNIT V:

[15 hrs]

Algorithm: Divide and Conquer: Introduction to Algorithm- Criteria of an algorithm - Complexity analysis - Divide and Conquer - Strassen's Matrix Multiplication.

Text Books:

1. Fundamentals of “Data structures in C++”, E. Horowitz, S.Sahni and Mehta – 2nd Edition, Galgotia Publication-2008.
2. Data Structures using C and C++ by Langsam, Augenstein and Tanenbaum, PHI/Pearson Education, 2nd Edition,2015.
3. Computer Algorithms E.Horowitz. S.Sahni and S.Rajasekaran- - Galgotia Publication, Pvt.Ltd.- 2008.

Reference Books:

4. Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss, Pearson Education. 3rd Edition, 2007.

I B.Sc. (AI)	PRACTICAL - PROGRAMMING IN C For the students admitted from the year 2024	AIP101
SEMESTER – I		HRS/WK-3
CORE PRACTICAL -I		CREDIT – 2

Course Objectives

To understand concepts of for, while loop and switch, Functions and recursions, and develop String Manipulations.

Course Outcomes

- CO1 :** To Enhance the analyzing and problem-solving skills and use the same for writing programs in C.
- CO2 :** To Write diversified solutions, draw flowcharts and develop a well-documented and indented program according to coding standards.
- CO3 :** To Learn to debug a given program and execute the C program.
- CO4 :** To have enough practice the use of conditional and looping statements.
- CO5 :** To implement arrays, functions and pointers.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: AIP101					TITLE OF THE PAPER: Practical-PROGRAMMING IN C					HOURS: 3	CREDITS: 2
COURSE OUTCOME S	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	$0 \leq \text{rating} \leq 1$	$1.1 \leq \text{rating} \leq 2$	$2.1 \leq \text{rating} \leq 3$	$3.1 \leq \text{rating} \leq 4$	$4.1 \leq \text{rating} \leq 5$
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

LIST OF PRACTICAL EXERCISES

Control Statements:

1. Print n Fibonacci numbers – (using for)
2. Generate Prime numbers – (using while)
3. Simple arithmetic on two numbers – (using switch/case)

Functions:

4. Swap two values using call by value / call by reference.

String Manipulation.

5. Operations on string such as length, concatenation and copy of a string to another.

Matrices:

6. Matrix Addition, Subtraction, Multiplication, Transpose of matrices.

Searching:

7. Binary Search.

Sorting:

8. Bubble Sort
9. Insertion Sort

Structures:

10. Students Mark statement

Files

11. Creating/ Reading/ Writing a text

I B.Sc. (AI)	DISCRETE MATHEMATICS For the students admitted from the year 2024	AMAI11
SEMESTER I		HRS/WK-6
ALLIED I		CREDIT -6

Course Objectives

The course aims to introduce the concepts of recurrence relations and generating functions, Mathematical logic, Duality law and Lattices, Boolean Algebra, Boolean Polynomials, Karnaugh Maps.

Course Outcomes:

- CO1 :** know the basic concepts of recurrence relations and generating functions
- CO2 :** To learn to solve the Mathematical logic.
- CO3 :** To know the concepts of Mathematical logic: Functionally complete sets of connectives and Duality law.
- CO4 :** To understand the concepts of Lattices.
- CO5 :** To know the basic concepts of Boolean Algebra.

SEMESTER: I	COURSE CODE: AMAI11	COURSE TITLE: DISCRETE MATHEMATICS														HOURS 6	CREDITS 6
COURSE OUTCOMES	PROGRAMME OUTCOMES (PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)										MEAN SCORE OF CO'S	
	PO 1	P O 2	P O 3	P O 4	P O 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10		
CO1	3	5	2	2	4	3	5	5	2	4	3	3	3	3	4	3.4	
CO2	4	5	3	4	3	4	4	3	5	4	3	4	5	3	5	3.9	
CO3	4	4	4	3	3	5	5	3	4	5	2	3	5	4	4	3.8	
CO4	3	5	3	3	4	5	5	3	4	4	3	4	5	3	5	3.9	
CO5	4	3	3	4	4	3	5	4	4	5	3	4	4	3	4	3.8	
Mean Overall Score																3.7	

Result: The Score of this Course is 3.7 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	$0 \leq \text{rating} \leq 1$	$1.1 \leq \text{rating} \leq 2$	$2.1 \leq \text{rating} \leq 3$	$3.1 \leq \text{rating} \leq 4$	$4.1 \leq \text{rating} \leq 5$
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT I: RECURRENCE RELATIONS AND GENERATING FUNCTIONS

Recurrence - Polynomials and their Evaluations - Recurrence Relations - Solution of Finite Order Homogeneous [linear] Relations - Solutions of Non-homogeneous Relations.

UNIT II: MATHEMATICAL LOGIC

TF Statements - Connectives - Atomic and Compound Statements – Well-formed [Statement Formulae] - Parsing - Truth Table of a Formula - Tautology - Tautological Implications and Equivalence of Formulae.

UNIT III: MATHEMATICAL LOGIC

Replacement process - Functionally complete sets of connectives and Duality law – Normal Forms - Principal Normal Forms.

UNIT IV: LATTICES

Lattices [omit example 15 Pp No.10.6) - Some properties of Lattices - New Lattices (omit remark PP: 10.14) - Modular and Distributive Lattices (omit theorem 10 and 17, Example 4 - Pp 10.23, Example 11 - Pp 10.24)

UNIT V: BOOLEAN ALGEBRA

Boolean algebra - Boolean Polynomials - Karnaugh Maps

TEXT BOOK:

1.Venkatraman M. K, Sridharan. N, N. Chandrasekaran, “Discrete Mathematics”, (2007) The National Publishing Company, Chennai.

Unit 1: Chapter 5: sec -1 to 5

Unit 2: Chapter 9: sec -1 to 8

Unit 3: Chapter 9: sec -9 to 12

Unit 4: Chapter 10 sec -1 to 4

Unit 5: Chapter 10:sec -5 to 7

REFERENCE BOOKS:

1. K. L. P Mishra and N. Chandrasekaran,” Theory of Computer Science”, Prentice Hall of India, Pvt Ltd.

2.Trembly &Manohar,” Discrete Mathematical Structures applications to Computer Science”, Tata McGraw.

3.Hopcraft and Ullman,” Introduction to Automata Theory”, Languages and Computations, 2nd Edition, Pearson Education.

4. V. Ramaswamy,” Discrete Mathematical Structures with Applications to Combinatorics” Univ Press, 2006.

5. T. Veerarajan , “Discrete Mathematics with graph theory and Combinatorics”, TMG, 2007.

I B.Sc. (AI)	PYTHON PROGRAMMING For the students admitted from the year 2024	AI203
SEMESTER - II		HRS/WK-5
CORE – III		CREDIT –4

Course Objectives

To learn the syntax and semantics of Python Programming Language and python modules

Course Outcomes

- CO1 :** Write Python functions to facilitate code reuse and manipulate strings.
- CO2 :** Illustrate the process of structuring the data using lists, tuples and dictionaries.
- CO3 :** Demonstrate the use of built-in functions
- CO4 :** Be able to build and package Python modules for reusability.
- CO5 :** To Understand the concepts of files in Python.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE: AI203					TITLE OF THE PAPER: PYTHON PROGRAMMING					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	4	3	4	4	3	4	4	3.6	
CO2	4	4	4	4	4	3	4	3	3	4	3.7	
CO3	4	4	3	3	4	4	4	3	4	4	3.7	
CO4	4	4	3	3	4	4	3	3	4	3	3.5	
CO5	4	3	4	3	3	4	4	4	4	4	3.7	
Mean OverallScore											3.6	

Result: The Score of this Course is 3.6 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	$0 \leq \text{rating} \leq 1$	$1.1 \leq \text{rating} \leq 2$	$2.1 \leq \text{rating} \leq 3$	$3.1 \leq \text{rating} \leq 4$	$4.1 \leq \text{rating} \leq 5$
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT – I **[15 hrs]**

Basics of Python Programming: History of Python-Features of Python-Literal - Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.

UNIT – II **[15 hrs]**

Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop. **Jump Statements:** break, continue and pass statements.

UNIT – III **[15 hrs]**

Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments:** Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments- Recursion. **Python Strings:** String operations-Immutable Strings - Built-in String Methods and Functions - String Comparison.

UNIT – IV **[15 hrs]**

Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. **Tuples:** Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.

UNIT – V **[15 hrs]**

Python File Handling and GUI: Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Renaming and deleting files.

GUI: Python GUI Programming (Tkinter): Tkinter Programming example, Tkinter widges, standard attributes, geometry management

Textbooks

1. Reema Thareja, “Python Programming using problem solving approach”, Second Edition, January 2023, Oxford University Press.
2. Dr. R. Nageswara Rao, “Core Python Programming”, First Edition, , Dream tech Publishers.

Reference Books

1. Vamsi Kurama, “Python Programming: A Modern Approach”, Pearson Education.
2. Mark Lutz, ”Learning Python”, Orielly.
3. Adam Stewarts, “Python Programming”, Online.

I B.Sc. (AI)	INTRODUCTION TO ARTIFICIAL INTELLIGENCE For the students admitted from the year 2024	AI204
SEMESTER II		HRS/WK-5
CORE IV		CREDIT -3

Course Objectives

The Course aims to explore basic concepts of AI and understand the importance of agents, understand various search strategies and analyze knowledge representation and reasoning approaches.

- CO1 :** Examine fundamental AI ideas and recognize the significance of agents.
- CO2 :** Evaluate the architecture of expert systems.
- CO3 :** To Understand the importance of planning in real world scenarios.
- CO4 :** To Comprehend a range of search techniques
- CO5 :** Examine several techniques to reasoning and knowledge representation.

SEMESTER: II	COURSE CODE: AI204	COURSE TITLE: INTRODUCTION TO ARTIFICIAL INTELLIGENCE														HOURS 5	CREDITS 3
COURSE OUTCOMES	PROGRAMME OUTCOMES (PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)										MEAN SCORE OF CO'S	
	PO 1	P O 2	P O 3	P O 4	P O 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10		
CO1	3	5	2	2	4	3	5	5	2	4	3	3	3	3	4	3.4	
CO2	4	5	3	4	3	4	4	3	5	4	3	4	5	3	5	3.9	
CO3	4	4	4	3	3	5	5	3	4	5	2	3	5	4	4	3.8	
CO4	3	5	3	3	4	5	5	3	4	4	3	4	5	3	5	3.9	
CO5	4	3	3	4	4	3	5	4	4	5	3	4	4	3	4	3.8	
Mean Overall Score																3.7	

Result: The Score of this Course is 3.7 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT I : INTRODUCTION TO AI

[15 hrs]

Introduction to Artificial Intelligence – Foundations of Artificial Intelligence – History of Artificial Intelligence – What is Artificial Intelligence – Approaches to Artificial Intelligence – Applications of Artificial Intelligence.

UNIT II: PROBLEM SOLVING

[15 hrs]

Introduction – Types of Problems – Problem solving Agents –Problem of Building a System -Defining Problem as a State Space Search – Problem Characteristics – Problem Decomposition - Characteristics of Production System

UNIT III : SEARCH ALGORITHMS

[15 hrs]

Hierarchical Representation of Search Algorithms – **Uninformed Search** – Depth First Search – Breadth First Search – **Informed Search** – Generate and Test – Simple Hill Climbing – Characteristics of Heuristics Search- Differentiate between Uninformed Search and Informed Search.

UNIT IV : KNOWLEDGE REPRESENTATION

[15 hrs]

Introduction – Importance of Knowledge – Knowledge Based Systems –Representation of Knowledge- Knowledge organization- Knowledge Manipulation. **Knowledge Representation Issues:** knowledge Representation- Representation and Mappings-Approaches to Knowledge Representation

UNIT V: EXPERT SYSTEMS

[15 hrs]

Introduction to Expert System-Architecture of Expert Systems- Development of Expert System- Capabilities of Expert Systems-Characteristics of Expert Systems-Limitations of Expert Systems- Applications of Expert Systems.

Text Books:

1. Stuart J Russell and Peter Norvig, Artificial Intelligence – A Modern Approach, PHI Learning, Third Edition, 2015.
2. Dr.P.Rizwan Ahmed, Artificial Intelligence-Margham Publications, First Edition 2015.
3. Patterson W D, Introduction to Artificial Intelligence and Expert Systems, PHI Learning, First Edition, 1995.

Reference Books:

1. Elaine Rich and Kelvin Knight, Artificial Intelligence, TMH, Third Edition, 2009.

I B.Sc. (AI)	PRACTICAL - PYTHON PROGRAMMING For the students admitted from the year 2024	AIP202
SEMESTER– II		HRS/WK-3
CORE PRACTICAL - II		CREDIT - 2

Objectives:

To unleash the Programming skills in Python Language and Logic building capabilities.

Course Outcomes:

- CO1 :** Be able to design and program Python applications.
- CO2 :** Be able to create loops and decision statements in Python.
- CO3 :** Be able to work with functions and pass arguments in Python.
- CO4 :** Be able to build and package Python modules for reusability.
- CO5 :** Be able to read and write files in Python.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE: AIP202					TITLE OF THE PAPER: PRACTICAL-PYTHON PROGRAMMING					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean overall Score											3.5	

Result: The Score of this Course is 3.5 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

LIST OF PRACTICAL EXERCISES

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Functions.
6. Program using Arrays.
7. Program using Strings.
8. Program using Lists.
9. Program using Dictionaries.
10. Program to display the message-box in the desktop based applications.

I B.Sc. (AI)	OPERATIONS RESEARCH For the students admitted from the year 2024	AMAI22
SEMESTER – II		HRS/WK-5
ALLIED II		CREDIT – 5

Objectives:

The course aims to introduce linear programming, transportation methods, assignment models, sequencing problems, and game theory.

Course Outcomes:

- CO1 :** To use knowledge of operational research in LPP.
- CO2 :** Understand analogies between transportation problems, and phenomena in operational Research.
- CO3 :** Formulate physical problems as operational research using assignment models
- CO4 :** Classify operational research, and game theory, interpret the solutions.
- CO5 :** Interpret solutions in simulation & Applications.

SEMESTER II	COURSE CODE: AMAI22					COURSE TITLE: OPERATIONAL RESEARCH										HOURS 5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES (PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)										MEAN SCORE OF CO'S	
	P O 1	P O 2	P O 3	P O 4	P O 5	PSO 1	PS O2	P S O 3	PS O 4	PS O 5	P S O 6	PS O7	PS O 8	PS O9	PSO 10		
CO1	4	3	2	3	3	3	4	4	3	2	3	3	2	2	3	2.9	
CO2	4	3	2	2	2	3	4	4	3	2	2	3	2	3	3	2.8	
CO3	5	4	4	2	2	2	5	5	3	4	3	4	2	3	3	3.4	
CO4	4	4	3	3	3	2	5	5	4	3	2	4	2	3	2	3.3	
CO5	5	4	3	3	3	2	5	5	4	3	3	4	2	3	2	3.4	
Mean Overall Score															3.2		

Result: The Score of this Course is 3.2 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very poor	Poor	Moderate	High	Very High

This course is having **HIGH** association with programme outcomes and programme specific outcomes.

UNIT-1: LINEAR PROGRAMMING PROBLEM:

Linear programming problem - Mathematical formulation of the problem - Graphical solution method - Simplex method - The Big-M method - Duality - Dual simplex method (Simple Problems).

UNIT-2: TRANSPORTATION MODEL:

Definitions of the transportation model - Formulation and solution of transportation Models_ Finding an initial basic feasible solution (NWCM - LCM -VAM) - Degeneracy in Transportation Problem - Transportation Algorithm (MODI Method)

UNIT-3: ASSIGNMENT PROBLEM:

Definition of Assignment models - Mathematical representation of assignment models – Comparison with the transportation models - Solution of the assignment model - The Hungarian methods for solution of the assignment models - variation of the assignment problem. Travelling salesman problem.

UNIT-4: GAME THEORY

Games and Strategies - Two-person zero sum - Some basic terms - the maximin-minimax principle – saddle points - Games without saddle points-Mixed strategies - graphic solution $2 \times n$ and $m \times 2$ games.

UNIT-5: SIMULATIONS:

Simulation - application - advantages and disadvantages - Monte Carlo method - simple problems.

TEXT BOOK:

1. Gupta P.K. and Hira D.S., (2000) Problems in Operations Research, S.Chand & Co. Delhi

REFERENCE BOOKS:

- 1.J.K. Sharma, (2001) Operations research: Theory and Applications, Macmillan, Delhi
- 2.KantiSwaroop, Gupta P.K. and Manmohan, (1999) Problems in Operations Research, Sultan Chand & Sons., Delhi
- 3.V.K. Kapoor [1989] Operations Research, sultan Chand & sons. Ravindran A., Philips D.T. and Solberg J.J., (1987) Operations research, John Wiley & Sons, New York.
- 4.Taha H.A. (2003) Operations Research, Macmillan Publishing Company, New York.
- 5.S.J.Venkatesan, Operations Research, J.S. Publishers, Cheyyar-604 407.