

B.Sc. – COMPUTER SCIENCE WITH ARTIFICIAL INTELLIGENCE & MACHINE LEARNING									
SCHEME OF EXAMINATION FOR 2022 - 2023									
CHOICE BASED CREDIT SYSTEM & OBES									
Part	Course Code	Title of the Paper	Hours/ Week		Exam Hours	MAX.MARKS			Credits
			T	P			CI A	ESE	
I SEMESTER									
I	22UTL101/ 22UHN101/ 22UFR101	Tamil Paper-I/ Hindi Paper-I/ French Paper-I	6		3	50	50	100	3
II	22UEN101	English Paper-I	5		3	50	50	100	3
III	22UDA101	Core I: Java Programming	4		3	50	50	100	4
	22UAI102	Core II: Industry 4.0	4		3	50	50	100	4
	22UAI1A1	General Elective-1: Introduction to Linear Algebra	4		3	50	50	100	4
	22UAI103	Core Lab I: Programming Lab in Java		5	3	25	25	50	2
IV	22HEC101	Human Excellence: Personal Values& SKY Yoga Practice – 1		1	2	25	25	50	1
	22UHR101	Human Rights in India	1		2		50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)							
Total								650	23

<u>II SEMESTER</u>									
Part	Course Code	Title of the Paper	Hours/ Week		Exam Hours	MAX.MARKS			Credits
			T	P		CI A	ESE	Total	
I	22UTL202/ 22UHN202 22UFR202	Tamil Paper-II/ Hindi Paper-II/ French Paper-II	6		3	50	50	100	3
II	22UEN202	English Paper – II	5		3	50	50	100	3
III	22UAI204	Core III: Programming in Python	3		3	50	50	100	4
	22UAI205	Core IV: Data Structures & Algorithms	4		3	50	50	100	4
	22UAI2A1	General Elective 2 : Optimization techniques	5		3	50	50	100	4
	22UAI206	Core Lab II: Programming Lab in Python		4	3	25	25	50	2
	22UAI207	Capstone Project - I				25	25	50	2
IV	22HEC202	Human Excellence: Family Values& SKY Yoga Practice-2		1	2	25	25	50	1
	22EVS201	Environmental Studies	2		2		50	50	2
V		Extension Activities (NSS, NCC, Sports & Games)							
EC		Online Course (MOOC/NPTEL/SWAYAM) Optional							
	22CMM201	Manaiyiyal Mahathuvam - I	Certificate course						
	22CUB201	Uzhavu Bharatham - I	Certificate course						
Value Added Course	22VAD201	Department Specific Value-Added Course							
Total								700	25

Programme Code:	B.Sc			Programme Title:	Bachelor of Science (Computer Science with AI & ML)	
Course Code:	22UAI101			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem	60	Core I:	Semester:	I
				Java Programming	Credits:	4

Course Objective

The course provides insight knowledge about object oriented programming concepts and programming language in Java.

Course Outcome

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Develop an in-depth understanding of object-oriented programming concepts	K1
CO2	Explain the various programming language constructs, object oriented concepts like overloading, inheritance, polymorphism, Interfaces, threads, exception handling and packages	K2
CO3	Illustrate the concepts of Applets, files and the concept of stream classes.	K3
CO4	Outline the benefits and applications of objects oriented programming concepts and defend how JAVA differs from other programming languages	K4
CO5	Judge the pros and cons of other object oriented language with the concepts of Java	K5

Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	M	L	M	L	M	M	H	H
CO2	H	H	H	H	H	L	M	L	M	L	H	H

CO3	M	H	M	H	M	L	M	M	M	L	M	H
CO4	M	H	M	H	M	L	H	L	M	L	M	H
CO5	H	M	H	H	L	L	M	L	M	H	H	H

Units	Content	Hrs
Unit I	INTRODUCTION: Introduction to Java - Features of Java - Object Oriented Concepts - Lexical Issues - Data Types - Variables - Arrays - Operators - Control Statements.	12
Unit II	Classes and Objects: Classes - Objects - Constructors - Overloading method - Access Control - Static and fixed methods - Inner Classes - String Class - Inheritance - Overriding methods - Using super- Abstract class.	11
Unit III	Packages: Access Protection - Importing Packages - Interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Messaging - Runnable Interface - Inter thread Communication - Deadlock - Suspending, Resuming and stopping threads - Multithreading.	12
Unit IV	I/O Streams: File Streams - Applets - String Objects - String Buffer - Char Array - Java Utilities - Code Documentation .	12
Unit V	Networks basics: Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL – Datagrams - Working with windows using AWT Classes - AWT Controls - Layout Managers and Menus.	13
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods:

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	R.Nageswara Rao	Core Java : An Integrated Approach	John Wiley, ISBN 9789351199250	2016
2	Cay S.Horstmann, Gary Cornell.	Core Java 2 Volume I - Fundamentals	Oracle Press Java, 12 th Edition.	2022
3	H. Schildt	Java2 The Complete Reference	MCGraw Hill, 11 th Edition	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Deital&Deital	Java How to Program	Third Edition, Pearson Education Asia	2012
2	K. Arnold and J. Gosling	The Java Programming Language	Addison Wesley, 4 th Edition	2005

Course Designed by	Head of the Department	Curriculum Development Cell	Controller of the Examination
Name and Signature	Name and Signature	Name and Signature	Name and Signature
Dr. S. Niraimathi	Dr. S. Niraimathi	Mr. K. Srinivasan	Dr. R .ManicaChezian
Signature	Signature	Signature	Signature

Programme Code:	B.Sc			Programme Title:	Bachelor of Science (Computer Science with AI & ML)		
Course Code:	22UAI204			Title	Batch:	2022 - 2025	
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	60	Core III: Programming in Python	Semester:	II	
					Credits:	4	

Course Objective

To impart knowledge in Core python, advanced concepts like Regular Expressions and Artificial Intelligence & Data Science tools which allow students to apply the concepts to become effective Python programmers.

Course Outcome

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the core programming constructs of Python	K1
CO2	Express proficiency in the handling of functions, strings,lists, dictionaries, tuples and sets	K2
CO3	Apply the use of regular expressions and built-in functionsto navigate the file system.	K3
CO4	Illustration of Object-oriented Programming conceptsin Python	K4
CO5	Realize the power of modules like NumPy, pandas, and Altair in developing solutions to problems related to data science	K5

Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	M	L	M	L	M	M	H	M
CO2	H	L	H	H	H	L	M	L	M	L	H	H
CO3	M	H	M	H	M	L	M	M	M	M	H	H
CO4	M	L	M	H	H	L	H	L	M	L	H	H
CO5	H	M	H	H	L	L	M	L	M	H	H	H

Units	Content	Hrs
Unit I	Introduction: Identifiers - Keywords - Statements and Expressions - Variables - Operators - Precedence and Associativity - Data Types - Indentation - Comments - Reading Input - Print Output - Type Conversions - The type() Function and Is Operator - Dynamic and Strongly Typed Language. Control Flow Statements - Functions: Built-In Functions - Commonly Used Modules - Function Definition and Calling the Function - The return Statement and void Function- Scope and Lifetime of Variables - Default Parameters - Keyword Arguments - *args and **kwargs - Command Line Arguments.	12
Unit II	Strings : Creating and Storing Strings - Basic String Operations - Accessing Characters in String by Index Number - String Slicing and Joining - String Methods - Formatting Strings – Lists: Creating Lists - Basic List Operations - Indexing and Slicing in Lists - Built-In Functions Used on Lists - List Methods - The del Statement.	11
Unit III	Dictionaries: Creating Dictionary - Accessing and Modifying key:valuePairs in Dictionaries - Built- In Functions Used on Dictionaries - Dictionary Methods - The del Statement - Tuples and Sets: Creating Tuples - Basic Tuple Operations - Indexing and Slicing in Tuples - Built-In Functions Used on Tuples - Relation between Tuples and Lists -Relation between Tuples and Dictionaries - Tuple Methods - Using zip() Function - Sets - Set Methods – Frozenset.	12
Unit IV	Files: Types of Files - Creating and Reading Text Data - File Methods to Read and Write Data - Reading and Writing Binary Files - The Pickle Module - Reading and Writing CSV Files - Python os and os.path Modules Regular Expression Operations: Using Special Characters - Regular Expression Methods - Named Groups in Python Regular Expressions - Regular Expression with glob Module.	12
Unit V	Object-Oriented Programming: Classes and Objects - Creating Classes in Python - Creating Objects in Python - The Constructor Method - Classes with Multiple Objects - Class Attributes versus Data Attributes - Encapsulation - Inheritance - The Polymorphism –Introduction to Data Science: Functional Programming - JSON and XML in Python - NumPy with Python - Pandas – Altair.	13
	Total Hours	60

Pedagogy

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Assessment Methods:

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	S. Gowrishankar, A. Veena,	Introduction to Python Programming,	CRC Press Taylor and Francis Group, Ist Edition	2018

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	E.Balagurusamy	Introduction to Computing and Problem Solving Using Python	McGraw Hill Education1st Edition	2016
2	Wesley J. Chun	Core PythonProgramming	, Pearson Education, 2nd Edition	2009

Course Designed by	Head of the Department	Curriculum Development Cell	Controller of the Examination
Name and Signature	Name and Signature	Name and Signature	Name and Signature
Name: Dr. S. Niraimathi	Name: Dr. S. Niraimathi	Name: Mr. K. Srinivasan	Name: Dr. R .ManicaChezian
Signature	Signature	Signature	Signature