22AIE205 INTRODUCTION TO PYTHON L-T-P-C: 1- 0- 3- 2

Department of Computer Science and Engineering
Amrita Vishwa Vidyapeetham, Amritapuri Campus
Course Plan
Academic Year: 2023-2024
S3 B.Tech. AI – 2022 batch

Faculty: Mrs. Preethi S. Nair

Course Objectives:

- To acquire programming skills in core Python.
- To understand how to write functions and pass arguments in Python.
- To develop fundamental understanding of how to build and package Python modules for reusability.
- To develop program in python to read and write files.

Course Outcomes:

CO1: Solve problems using Python conditionals and loops.

CO2: Apply Python functions and function calls to solve problems.

CO3: Apply Python data structures to represent complex data.

CO4: Develop Python Packages for reusability.

CO-PO Mapping:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	3	-	-	-	3	2	3	3	1	1	1
CO2	3	3	3	3	3	-	-	-	3	2	3	3	1	1	1
CO3	3	2	3	3	3	-	-	-	3	2	3	3	1	1	1
CO4	3	2	3	3	3	-	-	-	3	2	1	3	1	1	1

Syllabus:

Introduction to Python-Control Statements-List, Ranges & Tuples in Python-Python Dictionaries and Sets- Input and Output in Python-Python built in function-Python Object Oriented-Exceptions-Python Regular Expressions-Python Multithreaded Programming-Using Databases in Python-Regular Expression -Thread Essentials-Web Scraping in Python-Data Science Using Python-Graphical User Interface-Django Web Framework in Python Interface of python with an SQL database-Connecting SQL with Python-Performing Insert, Update, Delete Queries using Cursor-NumPy-Pandas and data frame operations on Toyota Corolla dataset-Data visualization; matplotlib, seaborn libraries-Python Libraries.

Textbooks:

Allen B. Downey, "Think Python: How to Think like a Computer Scientist", 2nd Edition, O'Reilly Publishers, 2016.

References:

Paul Deitel and Harvey Deitel, "Python for Programmers", Pearson Education, 1st Edition, 2021.

Eric Matthes, "Python Crash Course, A Hands – on Project Based Introduction to Programming", 2nd Edition, No Starch Press, 2019.

https://www.python.org/,numpy.org

Martin C. Brown, "Python: The Complete Reference", 4th Edition, Mc-Graw Hill, 2018.

David Beazley, Brian Jones., "Python Cookbook", Third Edition, Orelly Publication, 2013, ISBN 978- 1449340377

Evaluation Pattern:

Assessment	Internal / External	Weightage(%)
Assignments(Minimum 2)	Internal	30
Quizzess(Minimum 1)	Internal	20
Mid-term Examination	Internal	20
Term Project/End Semester Examination	External	30

Lecture Plan:

Week#	Contents	Keywords	Objective	CO
Week #1 (Nov 20, 2023)	Introduction to python,Contol statements	Python,Variables,Data types, Loops, Break, Pass	Python programming fundamentals with code examples illustrating key language features	CO1 CO2, CO3
Week #2 (Nov 27, 2023)	Lists and Tuples,Python built-in functions	Accessing list elements, Organizing a list, Numerical list, Tuples	Introduces basic list processing and functions.	CO1 CO2, CO3
Week #3 (Dec 04, 2023)	Python Dictionaries	Accessing values, Looping, Nesting	Presents python data structure:Dictionary	CO1, CO2, CO3
	Mini Project -Topic Selection			
Week #4 (Dec 11, 2023)	Python Object Oriented	Classes and objects, Functions	To understand concepts of object oriented paradigms.	CO1, CO2, CO3
Week #5 (Dec 18, 2023)	Python Object Oriented Cont.	Inheritance	To understand concepts of object oriented paradigms.	CO1, CO2, CO3
	Quiz#1			
Week #6 (Dec 26, 2023)	Files and Exceptions	Reading, Writing, storing data to file, Exception handling methods	To learn file handling and exceptions	CO1, CO2
Week #7 (Jan 01, 2024)	Thread Essentials	Threading in python, multi-threading with example	To understand the basics of multi-threading.	CO1
	Mini Project Evaluation-Phase 1			
Week #8(Jan 08, 2024)	Mid Term Examination			
Week #9 (Jan 15, 2024)	Web Scraping in Python	Beautiful Soup library	Introduces basic concepts.	CO4
Week #10 (Jan 22, 2024)	Data Science using Python	Pandas, NumPy, SciPy	Presents python libraries for data science	CO4
	Quiz #2			
Week #11 (Jan 29, 2024)	Django Frame work in Python with SQL	Django framework, Architechture,Installation, Project structure	Familiarise with the framework and its working	CO4
Week #12 (Feb 05, 2024)	Connecting SQL with Python	Performing Insert, Update, Delete Queries using Cursor ,Data frame operations on Toyota Corolla dataset	Implement database connectivity with python and introduce Toyota Corolla dataset	CO4
Week #13 (Feb 12, 2024)	Mini Project Evaluation-Phase 2			
Week #14 (Feb 19, 2024)	Data Visualization	Matplotlib library Seaborn library	Discussing about the visualization libraries	CO4
Week #15 (Feb 26, 2024)	Mini Project Evaluation-Final Presentation			

Evaluation Policy:

Evaluation Policy	Components	Remarks	Split up	Total
Continuous Assessment	Total 8 Lab Assignments	Lab Assignment (Programming Assignments) Copying from any source is not allowed	Lab sheet submission (8 Marks) (1 mark for each timely submission) Lab sheet evaluations-2 (22 marks) (12 mark for each evaluation)	30 %
	Quizzes (#2)	Quiz1-Week #5 Quiz2-Week#10	Quiz 1 (10 Marks) Quiz 2 (10 marks)	20 %
Mid Term Examination	Written Examination	Theory Program	1 Examination (20 Marks)	20 %
Team Project/End Semester Examination	Project (30 Marks) Topic Should be mapped to CO2, CO3, CO4	Team Project#1(Max 4 members in a Group) Topic Selection-Week #3 Phase1-Week #7 Phase 2-Week #13 Final Presentation-Week#15	**Phase 1**- Proposal and mini draft Submission (5 marks) **Phase 2-** Module description and Evaluation(5 marks) **Final Presentation** Viva (10 marks) Demo(10 marks)	30 %