Karmaveer Bhaurao Patil University, Satara

Syllabus for

Diploma-I (Artificial Intelligence with Python)

Under

Faculty of Science and Technology

(As per NEP 2020)

With effect from Academic Year 2024-2025

Department of Computer Science (Entire)
Revised Syllabus of Diploma Program (UG) (2024-2025)

Preamble:

Artificial Intelligence is one of the most advanced fields of computer science which involves use of Mathematics, Statistics, Information Technology and Information Sciences in discovering new information and knowledge from large databases and optimize Human effort overall. It is a new emerging interdisciplinary area of research and development which has created interest among scientists of various disciplines like Computer Science, Mathematics, Statistics, Information Technology

Program Objectives

1. To create a skilled workforce to match the requirements of the society.
2. To impart knowledge of Science is the basic objective of this Program
3. To develop scientific attitude is the major objective so as to make the students open minded, critical and curious

Program Outcomes:

1. The students will be able to develop software.
2. To acquire programming skills in core Python.
3. To acquire Object Oriented Skills in Python

I Year Diploma Program

1. Title: Artificial Intelligence with Python
2. Year of Implementation: 2024-2025
3. Duration: One Year
4. Pattern: Semester
5. Medium of Instruction: English
6. Contact hours: 7 hours/eek
8. Structure of Course:

Syllabus Structure (UG):

Year	Semester	Course No.	Course Code	Content Hours	Credits (1 Credit = 15H)	Marks
1	I	CTI	DCSET101	30	2	75
	I	CLI	DCSEL101	60	2	75
	II	CTII	DCSET202	30	2	75
	II	CLII	DCSEL202	60	2	75
	Annual	CPI	DCSEP101	30	1	50
		Total		210	9	350
2	III	CTIII	DCSET303	30	2	75
	III	CLIII	DCSEL303	60	2	75
	IV	CTIV	DCSET404	30	2	75
	IV	CLIV	DCSEL404	60	2	75
	Annual	CPII	DCSEP202	30	1	50
	Industrial and or Incubation and or Research or Field Training			30	1	-
		Total		240	10	350
3	V	CTV	DCSET505	30	2	75
	V	CLV	DCSEL505	60	2	75
	VI	CTVI	DCSET606	30	2	75
	VI	CLVI	DCSEL606	60	2	75
	Annual	CPIII	DCSEP303	60	2	100
	Industrial and or Incubation and or Research or Field Training			30	1	-
		Total		270	11	400
Total				**720**	**30**	**1100**

D: Diploma, CSE: Departmental Code (C: Chemistry, MI: Microbiology, CSE: Computer Science (Entire), etc.)

C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Courses: 10 (Theory: 06, Practical: 06, Project: 03) Theory and Practical: Semester, Project: Annual

Semester-I

DCSET 101: Introduction to Python
(Content Hrs. 30 Credits:2)

Course Objectives:
Students will be able to
1. Learn how to use lists, tuples, and dictionaries in Python programs.
2. Learn how to identify Python object types.

UNIT 1: Basics of Python

Introduction: Overview of Programming concepts, Python Programming Language and its importance, History, features, Installing Python, Running Python program,

Debugging: Python syntax, Python Indentation, Syntax Errors, Runtime Errors, Semantic Errors,

Variables and Expressions: Variables, Keywords, Data Types, Operators and Operands, Expressions, Order of Operations.

Conditional Statements: if, if-else, nested if - else Looping: for, while, nested loops

Control statements: Break, continue, pass

UNIT 2: Lists, Tuples, Set and Dictionaries

Lists: Introduction, Values and Accessing Elements, traversing a List, deleting elements from List, Built-in List Operators, Built-in List functions and methods

Tuples: Introduction, Accessing values in Tuples, Tuple Assignment, Tuples as return values, Variable-length argument tuples, Basic tuples operations, Concatenation, Repetition, in Operator, Iteration, Built-in Tuple Function's

Set: Introduction, Set Items (Unordered, Unchangeable and do not allow duplicate values), The set () Constructor

Dictionaries: Creating a Dictionary, Accessing Values in a dictionary, Updating Dictionary, Deleting Elements from Dictionary, Properties of Dictionary keys, Operations in Dictionary, Built-In Dictionary Functions, Built-in Dictionary Methods

Course Outcomes:
1. Student should get Knowledge about control structures of Python
2. Student should get Knowledge of Lists, Tuples, Dictionaries

References:

1. Python Programming: An Introduction to Computer Science-by John Zelle
2. Python Programming for the Absolute Beginner - by Michael Dawson
3. Python Programming for Beginners - by James Tudor
4. Head First Python -- by Paul Barry

DCSEL 101:(Practical)

Course Objectives:
Students will be able to
1. Learn how to use lists, tuples, and dictionaries in Python programs.
2. Learn how to identify Python object types.

1. Write a program to display simple message on o/p screen.

2. Write a Python program to display the current date and time.

3. Write a program to take input an integer value from user and display it.

4. Write a program to calculate area of circle.

5. Write a program to calculate factorial of a number.

6. Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.

7. Write a function to check the input value is Armstrong, display the respective message.

8. Write a program to generate the Fibonacci series.

9. Write a python program to print the even number from a given list.

10. Write a program to add and remove members in a list and display that list.

11. Write a program to perform following operation on a list :
a)sort   b)reverse

12. Python Program to Put Even and Odd elements in a List into Two Different Lists

13. Write a Python program to add an item in a tuple and display that tuple.

14. Write a program using the set() constructor to make set

15. Create and print a dictionary with keys as brand, model, and year with their respective values.

Course Outcomes:

1. Student should get Knowledge about control structures of Python

2. Student should get Knowledge of Lists, Tuples, Dictionaries

References:

1. Python Programming: An Introduction to Computer Science-by John Zelle

2. Python Programming for the Absolute Beginner - by Michael Dawson

3. Python Programming for Beginners - by James Tudor

4. Head First Python -- by Paul Barry

Semester-II

DCSET 202: Python Programming
(Content Hrs. 30 Credits:2)

Course Objectives:
Students will be able to
1. Learn how to use lists, tuples, and dictionaries in Python programs.
2. Learn how to identify Python object types.

UNIT 1: Functions, Strings and Files
Defining a function, Calling a Function, types of Functions, Math Functions, Function Arguments, Adding New Functions, Flow of Execution, Return Values, Global and local variables, Recursion.
Strings: Accessing strings, Basic operations, String Slices, Traversal with a for Loop, Function and methods
Files: Text files, Opening and closing file, Reading and writing files, Functions

UNIT 2: Introduction to artificial Intelligence
Concept of Artificial Intelligence, History of Artificial Intelligence, Early work in Artificial Intelligence, The Necessity of Learning AI, Artificial Intelligence and related fields, Artificial intelligence problems and techniques fields.

Course Outcomes:
1. Student should get Knowledge about control structures of Python
2. Student should get Knowledge of Lists, Tuples, Dictionaries

References:
1. Python Programming: An Introduction to Computer Science-by John Zelle
2. Python Programming for the Absolute Beginner - by Michael Dawson
3. Python Programming for Beginners - by James Tudor
4. Head First Python -- by Paul Barry

DCSEL 202:(Practical)

Course Objectives:

Students will be able to

1. Learn how to use lists, tuples, and dictionaries in Python programs.
2. Learn how to identify Python object types.

1. Write a program to create a dictionary and append elements to it and display it.

2. Write a function that reverses the user defined value.

3. Write a recursive functions to print the factorial for a given number.

4. Write a python function to check whether a number is in a given range or not

5. Write a python function to check number is even or not

6. Write a python function to check a year is leap or not

7. Write a python function to check a number is Positive or not

8. Write a python function to check a number is prime or not

9. Write a python function Reverse a number

10. Write a program for string operations

11. Write a program to add data into file and display the same

12. Write a python program to get the file size of a plain file

13. Write a case study on AI and python

14. Write a case study on Artificial Intelligence and related fields
15. Write a case study on techniques in AI

Course Outcomes:

1. Student should get Knowledge about control structures of Python
2. Student should get Knowledge of Lists, Tuples, Dictionaries

References:

1. Python Programming: An Introduction to Computer Science-by John Zelle
2. Python Programming for the Absolute Beginner - by Michael Dawson
3. Python Programming for Beginners - by James Tudor
4. Head First Python -- by Paul Barry

DCSEP101 (Project):
(Contact Hrs. 30/60, Credits: 1/2)

BOS Sub-Committee		Expert Committee
1 . Mr.R.P. Waghamare	Chairman	1.M.r Mayur More (Academic Expert) (S.G.M College, Karad)
2.Miss N.V. Lasure	Coordinator	2. Santosh Kapase (Industrial Expert) (Capgemini India)