

Lesson Plan

Branch: Computer Engineering
Semester: IV

Year: 2022-2023

Course Title: Skill Base Lab Course: Python Programming (CSL 405)	SEE:NA
Total Contact Hours:	Duration of SEE: NA
SEE Marks: 25(Term work)	
Lesson Plan Author: Prof.Parshvi Shah	Date: 27/02/2023
Checked By:	Date:01/02/2023

Prerequisites: Knowledge of some programming language like C, Java

Syllabus:

Module 1 : Python Basics

Data types in python, Operators in python, Input and Output, Control statement, Arrays in python, String and Character in python, Functions, List and Tuples, Dictionaries Exception, Introduction to OOP, Classes, Objects, Interfaces, Inheritance

Module 2: Advanced Python

Files in Python, Directories, Building Modules, Packages, Text Processing, Regular expression in python.

Module 3 : Data structure in Python

Link List, Stack, Queues, Dequeues

Module 4: Python Integration Primer

Graphical User interface, Networking in Python, Python database connectivity, Introduction to Django

Module 5 : MultiThreading

Thread and Process, Starting a thread, Threading module, Synchronizing threads, Multithreaded Priority Queue

Module 6: Numpy and Pandas

Creating NumPy arrays, Indexing and slicing in NumPy, creating multidimensional arrays, NumPy Data types, Array Attribute, Indexing and Slicing, Creating array views copies, Manipulating array shapes I/O. Basics of Pandas, Using multilevel series, Series and Data Frames, Grouping, aggregating, Merge DataFrames.

Course Outcomes (CO):

On successful completion of course learner will be able to:

CSL405.1: Demonstrate basic concepts of python such as control statements, basic data structures, functions, oops and multithreading in python.

CSL405.2: Explore file handling and text processing in python.

CSL405.3: Develop program for data structure using built in functions in python.

CSL405.4: Develop python based GUI and Explore networking concepts.

CSL 405.5: Develop real world application using frameworks/libraries in python.

CO-PO Mapping: (BL – Blooms Taxonomy, C – Competency, PI – Performance Indicator)

CO	BL	C	PI	PO	Mapping
CSL405.1	2	1.3	1.3.1	PO1	3
		1.4	1.4.1	PO2	1
		5.1	5.1.1	PO5	1
		2.1	2.1.3		
CSL405.2	2	1.3	1.3.1	PO1	3
		1.4	1.4.1	PO2	1
		5.1	5.1.1	PO5	1
		2.1	2.1.3		
CSL405.3	2	1.3	1.3.1	PO1	3
		1.4	1.4.1	PO2	1
		5.1	5.1.1	PO5	1
		2.1	2.1.3		
CSL405.4	2	1.3	1.3.1	PO1	3
		1.4	1.4.1	PO2	1
		5.1	5.1.1	PO5	1
		2.1	2.1.3		
CSL405.5	3	1.3	1.3.1	PO1	3
		1.4	1.3.2	PO2	1
		5.1	1.3.3	PO5	1
		2.1	1.4.1	PO9	3
		9.1	5.1.1	P010	2
		9.2	2.1.3	PO11	1
		9.3	9.1.1	PO12	1
		10.1	9.1.2		
		10.2	9.2.1		
			9.2.2		
			9.2.3		
			9.2.4		
			9.3.1		
			10.1.1		
	10.1.2				
	10.1.3				
	10.2.1				
	10.2.2				

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	(Eng g kno w)	(Ana)	(Des ign)	(inv estig atio n)	(tool s)	(eng gsoc i)	(Env)	(Eth)	(ind/T eam)	(comm.)	(PM)	(life long)
CSL405.1	3	1			1							
CSL405.2	3	1			1							
CSL405.3	3	1			1							
CSL405.4	3	1			1							
CSL405.5	3	1			1				3	2		1

CSL405.1	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities
	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
CSL405.2	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities
	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
CSL405.3	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities
	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
CSL405.4	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities

	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
CSL405.5	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities
	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
CSL405.6	1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply engineering fundamentals
	1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply theory and principles of Computer Science and engineering to solve an engineering problem
	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1 Identify modern engineering tools, techniques and resources for engineering activities
	2.1 Demonstrate an ability to identify and formulate complex engineering problem	2.1.3 Identify an algorithm that applies to a given problem
	9.1 Demonstrate an ability to form a team and define a role for each member	9.1.1 Recognize a variety of working and learning preferences; appreciate the value of diversity on a team 9.1.2 Implement the norms of practice (e.g. rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.
	9.2 Demonstrate effective individual and team operations—communication, problem-solving, conflict resolution and leadership skills	9.2.1 Demonstrate effective communication, problem-solving, conflict resolution and leadership skills 9.2.2 Treat other team members respectfully 9.2.3 Listen to other members 9.2.4 Maintain composure in difficult situations
	9.3 Demonstrate success in a team-based project	9.3.1 Present results as a team, with smooth integration of contributions from all individual efforts
	10.1 Demonstrate an ability to comprehend technical literature and document project work	10.1.1 Read, understand and interpret technical and non-technical information

		10.1.2 Produce clear, well-constructed, and well-supported written engineering documents 10.1.3 Create flow in a document or presentation – a logical progression of ideas so that the main point is clear
	10.2 Demonstrate competence in listening, speaking, and presentation	10.2.1 Listen to and comprehend information, instructions, and viewpoints of others 10.2.2 Deliver effective oral presentations to technical and non-technical audiences
	1.3 Demonstrate an ability to identify solutions/methods to solve the problem.	1.3.2 Apply various methods and evaluate their performance. 1.3.3 Choose an appropriate method for the given problem

CO-PSO Mapping:

CO	BL	C	PI	PO	Mapping
CSL405.5	3	1.3 1.4 5.1 2.1 9.1 9.2 9.3 10.1 10.2	1.3.1 1.3.2 1.3.3 1.4.1 5.1.1 2.1.3 9.1.1 9.1.2 9.2.1 9.2.2 9.2.3 9.2.4 9.3.1 10.1.1 10.1.2 10.1.3 10.2.1 10.2.2	PSO1	1

	PSO1	PSO2
CSL405.1		
CSL405.2		
CSL405.3		
CSL405.4		
CSL405.5	1	

CO Measurement Weightages for Tools:

	Lab	Quiz	Assignment		Mini Project	Course Exit Survey
			1	2		
CSL405.1	50%	20%			30%	100%
CSL405.2	40%	20%	20%		20%	100%
CSL405.3	40%	20%	20%		20%	100%
CSL405.4	40%	20%		20%	20%	100%
CSL405.5	40%	20%		20%	20%	100%

CO CSL 405.1:

Direct Method

$$A_{CSL405.1D} = 0.5 * Lab + 0.2 * Quiz + 0.3 * Mini Project$$

Final Attainment:

$$A_{CSL405.1} = 0.8 * A_{CSL405.1D} + 0.2 * A_{CSL405.1I}$$

CO CSL 405.2:

Direct Method

$$A_{CSL405.2D} = 0.4 * Lab + 0.2 * Quiz + 0.2 * Assignment + 0.2 * Mini Project$$

Final Attainment:

$$A_{CSL405.2} = 0.8 * A_{CSL405.2D} + 0.2 * A_{CSL405.2I}$$

CO CSL 405.3:

Direct Method

$$A_{CSL405.3D} = 0.4 * Lab + 0.2 * Quiz + 0.2 * Assignment + 0.2 * Mini Project$$

Final Attainment:

$$A_{CSL405.3} = 0.8 * A_{CSL405.3D} + 0.2 * A_{CSL405.3I}$$

CO CSL 405.4:

Direct Method

$$A_{CSL405.4D} = 0.4 * Lab + 0.2 * Quiz + 0.2 * Assignment + 0.2 * Mini Project$$

Final Attainment:

$$A_{CSL405.4} = 0.8 * A_{CSL405.4D} + 0.2 * A_{CSL405.4I}$$

CO CSL 405.5:

Direct Method

$$A_{CSL405.5D} = 0.4 * Lab + 0.2 * Quiz + 0.2 * Assignment + 0.2 * Mini Project$$

Final Attainment:

$$A_{CSL405.5} = 0.8 * A_{CSL405.5D} + 0.2 * A_{CSL405.5I}$$

Course Level Gap (if any):

NA

Content beyond Syllabus:

Workshop on Django Framework

Lecture Plan:

Module	Contents	Hours	Planned date	Actual date	Content Delivery Method	Remark
1	Data types in python, Operators in python, Input and Output	1	12-01-2023		PPT/Program Execution	
	Control statement, Arrays in python, String and Character in python	1	13-01-2023		PPT/Program Execution	
	Functions, List and Tuples, Dictionaries Exception	1	19-01-2023		PPT/Program Execution	
	Introduction to OOP, Classes, Objects	1	20-01-2023		PPT/Program Execution	
	Interfaces, Inheritance	1	24-01-2023		PPT/Program Execution	Quiz1
2	Files in Python, Directories	1	27-01-2023		PPT/Program Execution	
	Building Modules, Packages	1	31-01-2023		PPT/Program Execution	
	Text Processing, Regular expression in python	1	03-02-2023		PPT/Program Execution	Quiz 2
3	Link List, Stack,	1	10-02-2023		PPT/Program Execution	
	Queues, Dequeues	1	14-02-2023		PPT/Program Execution	Quiz 3
4	Graphical User interface	1	17-02-2023		PPT/Program Execution	
	Python database connectivity	1	18-02-2023(Online)		PPT/Program Execution	
	Networking in Python	1	21-02-2023		PPT/Program Execution	Quiz 4
5	Thread and Process, Starting a thread	1	24-02-2023		PPT/Program Execution	
	Threading module, Synchronizing threads	1	04-03-2023(Online)		PPT/Program Execution	
	Multithreaded Priority Queue	1	14-03-2023		PPT/Program Execution	
6	Creating NumPy arrays, Indexing and slicing in NumPy, creating multidimensional arrays,	1	17-03-2023		PPT/Program Execution	
	NumPy Data types, Array Attribute, Indexing and Slicing	1	21-03-2023		PPT/Program Execution	
	Creating array views copies, Manipulating array shapes I/O	1	24-03-2023		PPT/Program Execution	
	Basics of Pandas, Using multilevel series	1	25-03-2023(online)		PPT/Program Execution	Quiz 5

	Series and Data Frames,	1	28-03-2023		PPT/Program Execution	
	Grouping, aggregating, Merge Data Frames	1	11-04-2023		PPT/Program Execution	

List of Experiments		
Sr. No.	Title	Attained COs
1	Python Programs on String and List	CSL405.1
2	Python Programs on Tuples, Dictionary and sets	CSL405.1
3	Python Programs on Control statements and functions	CSL405.1
4	Python Programs to create class, object and methods	CSL405.1
5	Python Program for File Handling Operation	CSL405.2
6	Python Program for Text Processing	CSL405.2
7	Data structure in Python	CSL405.3
8	Creating GUI with Python	CSL405.4
9	Python programs to create Numpy Arrays and apply various methods	CSL405.5
10	Python programs to work on Panda package	CSL405.5
11	Presentation of Project	CSL405.5

Newly Added Experiments	
1	Python Programs on String and List
2	Python Programs on Tuples, Dictionary and sets
3	Python Programs on Control statements and functions
4	Python Programs to create class, object and methods
5	Python programs to create Numpy Arrays and apply various methods
6	Python programs to work on Panda package

Practical Session Plan

Batch	Dates		Remarks
	Planned	Actual	
Experiment No. 1 Python Programs on String and List			
A	26/01/2023		
B	24/01/2023		
C	23/01/2023		
D	27/01/2023		
Experiment No. 2 Python Programs on Tuples, Dictionary and sets			
A	02/02/2023		
B	31/01/2023		
C	30/01/2023		
D	03/02/2023		
Experiment No. 3 Python Programs on Control statements and functions			
A	09/02/2023		
B	07/02/2023		
C	06/02/2023		
D	10/02/2023		
Experiment No. 4 Python Programs to create class, object and methods			
A	16/02/2023		
B	14/02/2023		Project Presentation -I
C	13/02/2023		
D	17/02/2023		
Experiment No.5 Python Program for File Handling Operation			
A	23/02/2023		
B	21/02/2023		
C	20/02/2023		
D	24/02/2023		
Experiment No. 6 Python Program for File Handling Operation.			
A	16/03/2023		
B	14/03/2023		
C	13/03/2023		
D	17/03/2023		
Experiment No. 7 Data structure in Python.			
A	23/03/2023		
B	21/03/2023		
C	20/03/2023		
D	24/03/2023		

Experiment No. 8 Creating GUI with Python			
A	01/04/2023(online)		
B	01/04/2023(online)		
C	01/04/2023(online)		
D	01/04/2023(online)		
Experiment No. 9 Python programs to create Numpy Arrays and apply various methods			
A	06/04/2023		
B	11/04/2023		
C	03/04/2023		
D	14/04/2023		
Experiment No. 10 Python programs to work on Panda package			
A	06/04/2023		
B	11/04/2023		
C	03/04/2023		
D	14/04/2023		
Experiment No. 11 Presentation of Project			
A	13/04/2023		
B	11/04/2023		Project Presentation -II
C	10/04/2023		
D	14/04/2023		

Text Books:

- 1 Dr. R. Nageswara Rao, “Core Python Programming”, Dreamtech Press
- 2 Beginning Python: Using Python 2.6 and Python 3.1. James Payne, Wrox Publication
- 3 Anurag Gupta, G. P. Biswas, “Python Programming”, McGraw-Hill
- 4 E. Balagurusamy, “Introduction to computing and problem-solving using python”, McGraw Hill Education

Reference Books:

- 1.Learn Python the Hard Way, 3rd Edition, Zed Shaw's Hard Way Series
- 2 Laura Cassell, Alan Gauld, “Python Projects”, Wrox Publication

Web References:

- 1 "The Python Tutorial ",<http://docs.python.org/release/3.0.1/tutorial/>
- 2 Beginning Perl ,<https://www.perl.org/books/beginning-perl/>
- 3 <http://spoken-tutorial.org>
- 4 <https://starcertification.org/Certifications/Certificate/python>

Evaluation Scheme

NA

Verified by:

Programme Coordinator

Subject Expert