Lovely Professional University, Punjab

Course Code	Course Title	Course Planner	Lecture/ Practicals	Tutorials	Practicals	Credits
INT213	PYTHON PROGRAMMING	23360: Dr. Rahul Malik	2	0	2	3
Course Weightage	ATT: 5 CA: 25 MTE: 20 ETT: 50	**Exam Category: 14 : Mid Term Exam: All MCQ– End Term Exam: MCQ+Subjective**				
Course Orientation	PLACEMENT EXAMINATION(Mass Recruiters), SOFTWARE SKILL					

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	INTRODUCTION TO PROGRAMMING USING PYTHON	Y. DANIEL LIANG	PEARSON

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	PYTHON PROGRAMMING: USING PROBLEM SOLVING APPROACH	REEMA THAREJA	OXFORD UNIVERSITY PRESS
R-2	PYTHON THE COMPLETE REFERENCE	MARTIN C BROWN	Tata McGraw Hill, India
R-3	PROGRAMMING AND PROBLEM SOLVING WITH PYTHON	ASHOK KAMTHANE AND AMIT ASHOK KAMTHANE	Tata McGraw Hill, India

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	http://www.tutorialspoint.com/python/python_gui_programming.htm	Python GUI Programming (Tkinter)
RW-2	https://www.datacamp.com/courses/intro-to-python-for-data-science	Python Introduction
RW-3	https://www.coursera.org/learn/python	Learn Python from basics
RW-4	https://www.learnpython.org/	Learn python from basics to advanced
RW-5	https://www.w3schools.com/python/python_tuples.asp	Python Tuples
RW-6	https://www.tutorialspoint.com/python/python_database_access.htm	Python Database connection
RW-7	https://matplotlib.org/users/pyplot_tutorial.html	Matplotlib tutorial

RW-8	https://www.tutorialspoint.com/python_pandas/	Python pandas
RW-9	https://www.tutorialspoint.com/numpy/	Learn Numpy for matrix creation
RW-10	https://www.tutorialspoint.com/scipy/	Learn Scipy for scientific computation
RW-11	https://www.kaggle.com/benhamner/python-data-visualizations	Python data visualizations

Audio Visual Aids (AV)		
Sr No	**(AV aids) (only if relevant to the course)**	**Salient Features**
AV-1	http://nptel.ac.in/courses/106105166/26	Python Programming
AV-2	http://nptel.ac.in/courses/117106113/34	Python Programming

Software/Equipments/Databases		
Sr No	**(S/E/D) (only if relevant to the course)**	**Salient Features**
SW-1	https://www.python.org/download	Python Software
SW-2	https://anaconda.org/anaconda/python	Anaconda software installation

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture/Practical)	8

Detailed Plan For Lecture/Practicals

Week Number	Lecture/ Practical Number	Broad Topic(Sub Topic)	Chapters/Sections of Text/reference books	Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs	Lecture/Practical Description	Learning Outcomes	Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned	Live Examples
Week 1	Lecture/Practical 1	Introduction(introduction to python)	T-1 R-1 R-2	RW-2 RW-3 RW-4 SW-1 SW-2 AV-1	Lecture/Practical 1 should be used to discuss Lecturel zero. Lecture/Practical 2 should be used to discuss introduction and importance of Python and programming languages.	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in Python	

Lecture/Prac tical 2	Introduction(Programming languages)	T-1 R-1 R-2	RW-2 RW-3 RW-4 SW-1 SW-2 AV-1	Lecture/Practical 1 should be used to discuss Lecture/Practical zero. Lecture/Practical 2 should be used to discuss introduction and importance of Python and programming languages.	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Introduction(Programming Errors)	T-1 R-1 R-2	RW-2 RW-3 RW-4 SW-1 SW-2 AV-1	Lecture/Practical 1 should be used to discuss Lecture/Practical zero. Lecture/Practical 2 should be used to discuss introduction and importance of Python and programming Languages and errors .	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in Python	
Lecture/Prac tical 3	Variables, Expression and Statements(identifiers, variables)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and their precedence , type conversion	Class room discussion using power point presentation and live demonstration of programs in python.	
	Variables, Expression and Statements(Assignment Statements, Expressions)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and their precedence , type conversion	Class room discussion using power point presentation and live demonstration of programs in python.	

Variables, Expression and Statements(data types)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers , assignment statements expressions, named constants and data types . Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration	
Variables,Expression and Statements(named constants)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration in python	
Variables,Expression and Statements(Simultaneous Assignment)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding Lecture/Practical 3 should be	Students should be able to learn variables types and operators and there precedence, type conversion Students should be	Class room discussion using power point presentation and live demonstration in python Class room	
Variables,Expression and Statements(Boolean type)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types.	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration in python	

					Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding			
		Variables,Expression and Statements(Numeric data type)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, keywords. Lecture/Practical 4 should be used to discuss operators and compositions	Students should be able to learn variables types and operators and their compositions	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 4	Variables,Expression and Statements(operators)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration in python	
		Variables,Expression and Statements(operators Precedence and associativity)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding Lecture/Practical 3 should be	Students should be able to learn variables types and operators and there precedence, type conversion Students should be	Class room discussion using power point presentation and live demonstration in python Class room	
		Variables,Expression and Statements(type conversion And rounding)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration	

					constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding		in python	
		Variables,Expression and Statements(augumented Assignment operator)	T-1 R-1 R-2		Lecture/Practical 3 should be used to discuss variables, identifiers, assignment statements, expressions, named constants and data types. Lecture/Practical 4 should be used to discuss operators and precedence, augmented assignment operator ,type conversion and rounding	Students should be able to learn variables types and operators and there precedence, type conversion	Class room discussion using power point presentation and live demonstration in python	
Week 2	Lecture/Practical 5	Conditionals and Iteration (Conditional expressions)	T-1 R-1 R-2 R-3		Lecture/Practical 5 should be used to discuss random numbers, conditional expressions and minimizing numerical errors.	Students able to learn Conditional expressions, minimizing numerical errors.	Class room discussion using power point and live demonstration using python.	
		Conditionals and Iteration (random numbers)	T-1 R-1 R-2 R-3		Lecture/Practical 5 should be used to discuss random numbers, conditional expressions and minimizing numerical errors.	Students able to learn Conditional expressions, minimizing numerical errors.	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (minimizing numerical errors)	T-1 R-1 R-2 R-3		Lecture/Practical 5 should be used to discuss random numbers, conditional expressions and minimizing numerical errors.	Students able to learn Conditional expressions, minimizing numerical errors.	Class room discussion using power point and live demonstration using python	
	Lecture/Practical 6	Conditionals and Iteration (If statement)	T-1 R-1 R-2 R-3		Lecture/Practical 6 should be used to discuss conditional statement and iteration statement with example.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (If- else statement)	T-1 R-1 R-2 R-3		Lecture/Practical 6 should be used to discuss conditional statement and iteration statement with example.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (Nested If-elif statement)	T-1 R-1 R-2		Lecture/Practical 6 should be used to discuss conditional statement	Students able to learn Conditional and iteration statement	Class room discussion using power point and	

			R-3		and iteration statement with example.		live demonstration using python	
		Conditionals and Iteration (Multi-way if-elif statement)	T-1 R-1 R-2 R-3		Lecture/Practical 6 should be used to discuss conditional statement and iteration statement with example.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
	Lecture/Prac tical 7	Conditionals and Iteration (for loop)	T-1 R-1 R-2 R-3		Lecture/Practical 7 should be used to discuss the iteration statements with examples.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (While loop)	T-1 R-1 R-2 R-3		Lecture/Practical 7 should be used to discuss the iteration statements with examples.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (nested loops)	T-1 R-1 R-2 R-3		Lecture/Practical 7 should be used to discuss the iteration statements with examples.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
		Conditionals and Iteration (break and continue)	T-1 R-1 R-2 R-3		Lecture/Practical 7 should be used to discuss the iteration statements with examples.	Students able to learn Conditional and iteration statement	Class room discussion using power point and live demonstration using python	
	Lecture/Prac tical 8	Functions and recursion (function calls)	T-1 R-1 R-2 R-3		Lecture/Practical 7 should be used to discuss functions and type conversions. Lecture/Practical 8 covers parameter types and recursion.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in	
		Functions and recursion (function call)	T-1 R-1 R-2 R-3		Lecture/Practical 8 covers function definition , return values, function call and arguments.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (return values)	T-1 R-1 R-2 R-3		Lecture/Practical 8 covers function definition , return values, function call and arguments.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	

		Functions and recursion (positional and keyword arguments)	T-1 R-1 R-2 R-3		Lecture/Practical 8 covers function definition , return values, function call and arguments.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
Week 3	Lecture/ Practical 9	Functions and recursion (passing arguments by reference values)	T-1 R-1 R-2 R-3		Lecture/Practical 9 covers scope of variables, default arguments and returning multiple values.	Student understand about function usage and their applications. Allocate project to students.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (scope of variables)	T-1 R-1 R-2 R-3		Lecture/Practical 9 covers scope of variables, default arguments and returning multiple values.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (default arguments)	T-1 R-1 R-2 R-3		Lecture/Practical 9 covers scope of variables, default arguments and returning multiple values.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (returning multiple values)	T-1 R-1 R-2 R-3		Lecture/Practical 9 covers scope of variables, default arguments and returning multiple values.	Student understand about function usage and their applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/ Practical 10	Functions and recursion (recursion)	T-1 R-1 R-2 R-3		Lecture/Practical 10 covers recursion and math functions	Students will understand the concept of recursion and its difference with iteration.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (recursion vs. iteration)	T-1 R-1 R-2 R-3		Lecture/Practical 10 covers recursion and math functions	Students will understand the concept of recursion and its difference with iteration.	Class room discussion using power point presentation and Live demonstration of programs in Python	

		Functions and recursion (tail recursion)	T-1 R-1 R-2 R-3		Lecture/Practical 10 covers recursion and math functions	Students will understand the concept of recursion and its difference with iteration.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Functions and recursion (math functions)	T-1 R-1 R-2 R-3		Lecture/Practical 10 covers recursion and math functions	Students will understand the concept of recursion and its difference with iteration.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 11	String(string a compound data type, length)	T-1 R-1 R-2 R-3		Lecture/Practical 11 should be used to discuss string and its operations	Student will understand usage of string functionalities in various applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		String(string traversal)	T-1 R-1 R-2 R-3		Lecture/Practical 11 should be used to discuss string and its operations	Student will understand usage of string functionalities in various applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		String(string slices, comparision)	T-1 R-1 R-2 R-3		Lecture/Practical 11 should be used to discuss string and its operations	Student will understand usage of string functionalities in various applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
		String(find function, the str class)	T-1 R-1 R-2 R-3		Lecture/Practical 11 should be used to discuss string and its operations	Student will understand usage of string functionalities in various applications	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 12	Lists (list basics)	T-1 R-1 R-2 R-3		Lecture/Practical 12 should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	

		Lists(copying lists)	T-1 R-1 R-2 R-3		Lecture/Practical 12 should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Lists(passing lists to functions)	T-1 R-1 R-2 R-3		Lecture/Practical 12 should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	
Week 4	Lecture/Practical 13	Lists (returning lists from functions)	T-1 R-1 R-2 R-3		Lecture/Practical 13should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Lists (searching and sorting lists)	T-1 R-1 R-2 R-3		Lecture/Practical 13 should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Lists (multidimensional list)	T-1 R-1 R-2 R-3		Lecture/Practical 13 should be used to discuss about lists and its operations	Student will understand usage of lists and its operations	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 14	Tuples , sets and dictionaries (introduction to tuples)	T-1 R-1 R-2 R-3		Lecture/Practical 14 will be used to discuss the tuples and operation on tuples.	Students will understand the use of tuples and various operations on tuples.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Tuples , sets and dictionaries (operations on tuples)	T-1 R-1 R-2 R-3		Lecture/Practical 14 will be used to discuss the tuples and operation on tuples.	Students will understand the use of tuples and various Operations on tuples.	Class room discussion using power point presentation and Live demonstration of programs in Python	
Week 5	Lecture/Practical 15	Tuples , sets and dictionaries (Introduction to sets)	T-1 R-1 R-2 R-3		Lecture/Practical 15 will be used to discuss the sets and operation on sets.	Students will understand the use of sets and various operations on sets.	Class room discussion using power point presentation and	

							of programs in Python	
		Tuples , sets and dictionaries (set operations)	T-1 R-1 R-2 R-3		Lecture/Practical 15 will be used to discuss the sets and operation on sets.	Students will understand the use of sets and various Operations on sets.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 16	Tuples , sets and dictionaries (creating dictionary)	T-1 R-1 R-2 R-3		Lecture/Practical 16 should be used to discuss dictionaries and operations on dictionaries.	Students will understand dictionaries and operations on dictionaries.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Tuples , sets and dictionaries (adding, modifying and retrieving values)	T-1 R-1 R-2 R-3		Lecture/Practical 16 should be used To discuss dictionaries and operations on dictionaries.	Students will understand dictionaries and operations on dictionaries.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Tuples , sets and dictionaries (deleting items)	T-1 R-1 R-2 R-3		Lecture/Practical 16 should be used To discuss dictionaries and operations on dictionaries.	Students will understand dictionaries and operations on dictionaries.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Tuples , sets and dictionaries (dictionary methods)	T-1 R-1 R-2 R-3		Lecture/Practical 16 should be used To discuss dictionaries and operations on dictionaries.	Students will understand dictionaries and operations on dictionaries.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Tuples , sets and dictionaries (operations on dictionary)	T-1 R-1 R-2 R-3		Lecture/Practical 16 should be used To discuss dictionaries and operations on Dictionaries.	Students will understand dictionaries and operations on Dictionaries.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 17	Test - Code Based						

Week 6	Lecture/Practical 18	Classes and objects(creating classes)	T-1 R-2			Lecture/Practical 18 should be used to discuss classes and objects. Lecture/Practical 18 should be used to initialize objects and initiated classes.	Students understand usage of objects creation and accessing.	classroom discussion using power point presentation and Live demonstration of programs in Python
	Lecture/Practical 19	Classes and objects(creating instance objects)	T-1 R-2			Lecture/Practical 19 should be used to discuss classes and objects. Lecture/Practical 19 should be used to initialize objects and initiated classes.	Students understand usage of objects creation and accessing.	classroom discussion using power point presentation and Live demonstration of programs in Python
	Lecture/Practical 20	Classes and objects (accessing attributes)	T-1 R-2 R-3			Lecture/Practical 20 should be used to discuss attributes usages and OOP terminology	Students will understand usage of attributes and OOP terminology	Class room discussion using power point presentation and Live demonstration of programs in Python
	Lecture/Practical 21	Classes and objects (overview of OOP terminology)	T-1 R-2 R-3			Lecture/Practical 21 should be used to discuss attributes usages and OOP terminology	Students will understand usage of attributes and OOP terminology	Class room discussion using power point presentation and Live demonstration of programs in Python
Week 7	Lecture/Practical 22	Object oriented programming terminology (Class Inheritance)	T-1 R-1 R-2 R-3	SW-2		Lecture/Practical 23 should be used to discuss Class Inheritance and Lecture/Practical 34 used to discuss Overriding methods	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in Python
	Lecture/Practical 23	Object oriented programming terminology (Overriding Methods)	T-1 R-1 R-2 R-3	SW-2		Lecture/Practical 23 should be used to discuss Class Inheritance and Lecture/Practical 34 used to discuss Overriding methods	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in

							Python	
Week 8	Lecture/Practical 24	Object oriented programming terminology (Data Hiding)	T-1 R-1 R-2			Lecture/Practical 24 should be used to discuss data hiding and Lecture/Practical 25 should cover Function overloading. ALLOCATION OF CODE BASED 2	Student will understand usage of data hiding and related aaplications	Class room discussion using power point presentation and Live demonstration of programs in Python. ALLOCATION OF CODE BASED 2	
	Lecture/Practical 25	Object oriented programming terminology (Function Overloading)	T-1 R-1 R-2			Lecture/Practical 24 should be used to discuss data hiding Lecture/Practical 25 should cover Function overloading. ALLOCATION OF CODE BASED 2	Student will understand usage of data hiding and related applications	Class room discussion using power point presentation and Live demonstration of programs in Python. ALLOCATION OF CODE BASED 2	
				MTE					

Week 9	Lecture/Practical 26	Files and exceptions(introduction)	R-1 R-3		Lecture/Practical 26 used to discuss files and exception handling	Students will understand usage of file handling operations	Class room power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 26	Files and exceptions(text input and output)	R-1 R-3		Lecture/Practical 26 used to discuss files and exception handling	Students will understand usage of file handling operations	Class room power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 27	Files and exceptions (pickling)	T-1 R-2 R-3		Lecture/Practical 27 will cover pickling and exceptions.	Students will understand usage of file handling operations	Class room power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 27	Files and exceptions (exceptions handling)	T-1 R-2 R-3		Lecture/Practical 27 will cover exception handling.	Students will understand usage of file handling operations	Class room power point presentation and Live demonstration of programs in Python	
		Files and exceptions (raising exceptions)	T-1 R-2 R-3		Lecture/Practical 27 will cover exception handling.	Students will understand usage of file handling operations	Class room power point presentation and Live demonstration of programs in Python	
Week 10	Lecture/Practical 28	Building GUI using python (tkinter programming)	R-2	RW-1	Lecture/Practical 28 should be used to discuss basics of Tkinter programming.	Student will understand GUI basics through python	Class room power point presentation and Live demonstration of programs in Python	
		Building GUI using python (tkinter widgets like button,	R-2	RW-1	Lecture/Practical 28 should be used to	Student will understand GUI	Class room power point	

	Lecture/Practical 29	canvas, entry, frame, label, list box, menu, message, scale, text, spinbox, labelframe, tkMessagebox)			discuss basics of Tkinter programming.	basics through python	presentation and Live demonstration of programs in Python
		Building GUI using python (standard attributes)		RW-1	Lecture/Practical 28 should be used to discuss basics of Tkinter Programming.	Student will understand GUI basics through python	Class room power point presentation and Live demonstration
Week 11	Lecture/Practical 30	Installation of Mysql	T-1 R-2 R-3	RW-1	Lecture/Practical 29 should be used to Discuss MySQL. .	Student will Understand basics of database	Class room power point presentation and Live demonstration of programs in python.
	Lecture/Practical 31	Installation of MySQLdb	T-1 R-2 R-3	RW-1	Lecture/Practical 30 should be used to discuss MySQLdb. .	Student will understand basics Of MySQLdb	Class room power point presentation and Live demonstration of programs in python.
	Lecture/Practical 32	Python Connectivity	T-1 R-2 R-3	RW-1	Lecture/Practical 31 should be used to discuss MySQLdb.	Student will understand basics Of	Class room power point presentation and Live demonstration of programs in python.
	Lecture/Practical 33	Table creation	T-1 R-2 R-3	RW-1	Lecture/Practical 32 should be used to discuss table creation.	Student will understand basics Of database.	Class room power point presentation and Live demonstration of programs in python.

		Operations on tables.	T-1 R-2 R-3	RW-1	Lecture/Practical 33 should be used to discuss various .operations on tables.	Student will Understand various Operations on tables.	Class room power point presentation and Live demonstration of programs in python.	
Week 12	Lecture/Practical 34	Numpy arrays (arrays vs lists)	T-1 R-2 R-3	RW-9	Lecture/Practical 34 should be used to discuss anout Numpy arrays, creation of arrays, different operations on data and its difference from lists.	Students will understand usage of numpy arrays and its operations.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (data types)	T-1 R-2 R-3	RW-9	Lecture/Practical 34 should be used to discuss anout Numpy arrays, creation of arrays, different operations on data and its difference from lists.	Students will understand usage of numpy arrays and its operations.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (arrays from existing data)	T-1 R-2 R-3	RW-9	Lecture/Practical 35 should be used to discuss anout Numpy arrays, creation of arrays, different operations on data and its difference from lists.	Students will understand usage of numpy arrays and its operations.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (indexing and slicing)	T-1 R-2 R-3	RW-9	Lecture/Practical 35 should be used to discuss anout Numpy arrays, creation of arrays, different operations on data and its difference from lists.	Students will understand usage of numpy arrays and its operations.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (array maniputaion)	T-1 R-2 R-3	RW-9	Lecture/Practical 35 should be used to discuss anout Numpy arrays, creation of arrays, different operations on data and its difference from lists.	Students will understand usage of numpy arrays and its operations.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 35	Numpy arrays (broadcasting)	RW-9		Lecture/Practical 36 should be used to discuss various operations on Numpy arrays like statisrical functions, binary operations, search	Students will understand the usage of numpy arrays	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (Mathematical functions)	RW-9		Lecture/Practical 36 should be used to	Students will understand the usage	Class room discussion using	

					discuss various operations on Numpy arrays like statisrical functions, binary operations, search ,sort.	of numpy arrays	power point presentation and Live demonstration of programs in Python	
		Numpy arrays (statistical functions)	RW -9		Lecture/Practical36 should be used to discuss various operations on Numpy arrays like statisrical functions, binary operations, search and	Students will understand the usage of numpy arrays	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (sort)	RW -9		Lecture/Practical 37 should be used to discuss various operations on Numpy arrays like statisrical functions, binary operations, search and sort etc.	Students will understand the usage of numpy arrays	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Numpy arrays (search and counting functions)	RW -9		Lecture/Practical 37 should be used to discuss various operations on Numpy arrays like statisrical functions, binary operations, search and sort etc.	Students will understand the usage of numpy arrays	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Handling data with pandas (series)	RW-8		Lecture/Practical 20 should be used to discuss series, data frames, statistics and sorting operations using pandas.	Students will understand python library i.e. pandas in detail with examples.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 36	Handling data with pandas (dataframe)	RW -8		Lecture/Practical 20 should be used to discuss series, data frames, statistics and sorting operations using pandas.	Students will understand python library i.e. pandas in detail with examples.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Handling data with pandas (descriptive statistics)	RW -8		Lecture/Practical 20 should be used to discuss series,	Students will understand python library i.e. pandas in	Class room discussion using power point	

					data frames, statistics and sorting operations using pandas.	detail with examples.	presentation and Live demonstration of programs in Python	
	Lecture/Practical 37	Handling data with pandas (sorting)	RW-8		Lecture/Practical 20 should be used to discuss series, data frames, statistics and sorting operations using pandas.	Students will understand python library i.e. pandas in detail with examples.	Class room discussion using power point presentation and Live demonstration of programs in Python	
Week 13	Lecture/Practical 38	Data visualization with matplotlib(bar charts)	T-1 R-1 R-2		Lecture/Practical 41 used to cover bar charts.	Student will understand the use of python programming and its importance in industry.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Data visualization with matplotlib(pie charts)	T-1 R-2 R-3	RW-7 SW-2	Lecture/Practical 42 should be used to discuss pie charts and.	Student will understand the usage of plotting charts in various applications.	Class room discussion using power point presentation and Live demonstration of programs in Pytho	
		Data visualization with matplotlib(scatter plots)	T-1 R-2 R-3	RW-7 SW-2	Lecture/Practical 43 used to discuss scatter plots.	Student will understand the usage of plotting charts in various applications.	Class room discussion using power point presentation and Live demonstration of programs in Pytho	
	Lecture/Practical 39	Data visualization with seaborn (seaborn – color palette)	T-1 R-2	RW-8	Lecture/Practical 44 used to discuss color palette and histogram plotting in seaborn.	Student will understand the use of seaborn library and its applications.	Class room discussion using power point presentation and Live demonstration of programs in Python	
		Data visualization with seaborn (histogram)	T-1 R-2	RW-8	Lecture/Practical 44 used to discuss color palette and histogram plotting in seaborn.	Student will understand the use of seaborn library and its applications.	Class room discussion using power point presentation and Live demonstration of programs in Python	
	Lecture/Practical 40	Data visualization with seaborn (kernel density	T-1 R-2	RW-8	Lecture/Practical 45 used to discuss	Student will understand the use	Class room discussion using	

		estimates)			kernel density estimates in seaborn library	of seaborn library and its applications.	power point presentation and Live demonstration of programs in Python
		Data visualization with seaborn (plotting categorical data)	T-1 R-2	RW-8	Lecture/Practical 46 used to discuss plotting categorical data in seaborn libaray.	Student will understand the use of seaborn library and its applications.	Class room discussion using power point presentation and Live demonstration of programs in Python

CA Category of this Course Code is:C010102 (Total 3 tasks, 1 compulsory and out of remaining 1 best out of 2 to be considered)

Component	Iscompulsory	Weightage (%)	Mapped CO(s)
Project	Yes	50	CO1, CO2, CO3 CO4, CO5, CO6
Test - Code based 1	NO	50	CO1, CO2
BYOD - Practical	NO	50	CO4, CO5

Details of Academic Task(s)

Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Project	To check and enhance the project development ability and team work among students.	A project topic assigned by instructor to each group	Group	Offline	30	3/12
Test - Code based 1	To evaluate subject understanding and learning ability of the students	Syllabus of test will cover from Introduction, Variable expression and statements, Conditionals and iterations, Function and Recursion, String, List, Tuples and Dictionaries,Building GUI using python, class and objects, file and exceptions, GUI and database. Student should answer the question based on python code. Maximum marks of code based test is 30.	Individual	Offline	30	4 / 5
BYOD - Practical	To evaluate subject understanding and learning ability of the students.	Syllabus of BYOD Practical will cover from classes and objects, OOPS , data visualization with matplotlib and seaborn.	Individual	Offline	30	9/10