Python Programming for Begineers including Numpy, Pandas and Matplotlib

Introduction to algorithm to solve a numerical problem. Downloading latest free Python package from https://www.python.org/downloads/ under c-drive, Description of different components of Python, writing simple Python Code, basic syntax, editing, saving and running a script, data types, variables, assignments, arithmetic operators and expressions, writing comments, error messages, conditions, Boolean logic, logical operators, ranges, control statements: if-else, loops(for, while). Solving simple problems using Python language.

Introduction to Lists, tuples and dictionaries, basic list operators, replacing, inserting, removing an element; searching and sorting lists; dictionary literals, adding and removing keys, accessing and replacing values, traversing dictionaries., Solving problems from assignment sheet.

Introduction to String manipulations, subscript operator, indexing, slicing a string, string and number system, converting strings to numbers and vice versa, Solving problems .

Introduction to user defined functions, arguments and return values, formal vs actual arguments, named arguments, recursive call, applications., Solving problems from Assignment sheet.

Introduction to Data Files, Strings and text files in Python, manipulating files and directories, reading/writing text and numbers from/to file, creating and reading a formatted file(csv or tab-separated), Solving problems from assignment sheet.

Introduction to Bit-wise operators : Bit wise or(|), Bit wise and (&), Bit wise XOR(^), Bit wise Complement(~), Bit wise Left Shift(<<), Bit wise right shift(>>), to convert number/character to bits, To convert data file to bits and vice versa, Solving problems from assignment sheet.

Introduction to Computer Graphics using Python, Using simple in built functions : GraphWin(), Point(), Circle(), Line(), Rectangle(), Oval(), setFill(), setWidth(), draw(), getMouse(). Drawing simple diagrams using in-built functions in Python.

Introduction to GUI : **Python GUI** – tkinter, To create a tkinter app: Importing the module – tkinter, Create the main window (container), Add any number of widgets to the main window, Apply the event Trigger on the widgets.

Free download Anaconda Software from
https://www.anaconda.com/products/distribution/start-coding-immediately.
Description of different components of Anaconda, writing python code in Jupyter notebook and run the code,

Installing XAMPP Apache and MYSQL
Python MySQL Database Connection using MySQL Connector, Creating new database, table under MYSQL,
to insert values into MySQL server table using Python,
to Show All Tables in MySQL using Python,
to Get the Size of a Table in MySQL using Python,
to Rename a MySQL Table in Python,
to Copy a Table in MySQL Using Python,
to update Table columns using Python,
to Copy a Table Definition in MySQL using Python,
to Use IF Statement in MySQL Using Python,
to Delete Element from Table in MySql using Python,
Grant MySQL table and column permissions using Python,
to Count the Number of Rows in a MySQL Table in Python,
to Count SQL Table Column Using Python,
to Add a Column to a MySQL Table in Python,
to Get the Minimum and maximum Value of a Column of a MySQL Table Using Python,
to Concatenate Column Values of a MySQL Table Using Python,
Grant MySQL table and column permissions using Python,
Create MySQL Database Login Page in Python using Tkinter
Extract Data from Database using MySQL-Connector and XAMPP in Python

Introduction to numpy, importing numpy in Python code, converting lists to array, array manipulation, problem solving using Numpy.

Introduction to Pandas, importing pandas in Python code, Application of Pandas for data manipulation, solving problems from assignment sheet. Accessing csv files from Kaggle.

Introduction to Matplotlib, importing matplotlib in python code, reading standard database from Kaggle, Converting database to csv file, drawing different types of graphs using matplotlib,

Introduction to Image processing using Numpy and Matplotlib,
to convert RGB image to Gray scale, Black and white image, to extract Red, Blue and Green Channel from RGB image,
to resize an image, to crop a portion of an image, To plot curve.

Duration of Online Course : 36hrs, 6hrs/week.
Online Examination , Duration of Examination : 2 hrs
References:

1. Fundamentals of Python : First Programs, Author: Kenneth A. Lambert
Publisher: Course Technology, Cengage Learning , 2012, ISBN-13: 978-1-111-82270-5.
2. Python Notes for Professionals , e-book : goalkicker.com
3. Class notes will be supplied to all participants after every class through individual's email-id.