Python Programming for Data Analysis
Spring 2024 (Pre-Session)
Osiri University

INSTRUCTORS:	**Edward E. Salakpi, PhD and Wise Osagie**
CONTACT(S):	esalakpi@osiriuniversity.org
MEETING:	Contact me via email to meet
HOBBIES:	Basketball.

This is an introductory pre-semester course which spans two weeks. Students can access all course content and assignments through this course link. The instructor will host online teaching sessions three days a week. See section on course outline for details.

COURSE PRE-REQUISITE:
This course does not have any prerequisites. However, students should be aware that while it is not a formal component of their graduate degree program, it is essential for success in the MSc. in Data and Information Systems (DIS) program. Specifically, it is a mandatory requirement for students lacking a programming background or those seeking to enhance their programming skills before engaging in the Data Science and Analytics course.

COURSE DESCRIPTION:

Python is a versatile programming language suitable for creating native and web-based applications across various software domains. Its popularity has surged, particularly in data science and analytics, owing to its flexibility and user-friendly nature. This introductory course is designed for prospective students keen on acquiring programming skills for data analysis and visualization. The course emphasizes hands-on practice and comprehensively covers basic to intermediate Python programming concepts.

COURSE OBJECTIVES: The objectives of the course includes:

1. Understanding fundamental Python programming concepts and configuring the Python environment on personal computers.
2. Exploring the manipulation of Python data types, along with the application of loops and conditional statements.
3. Mastering the utilization of built-in Python functions and acquiring the skills to create custom functions.
4. Harnessing the power of Python packages (libraries) for tasks such as data wrangling, analysis, and visualization.

RECOMMENDED TEXTBOOK/MATRIALS:

- McKinney, W. (2022). Python for Data Analysis: Data Wrangling with Pandas, NumPy, and Jupyter. Japan: O'Reilly.

- Grus, J. (2019). Data Science from Scratch: First Principles with Python. United Kingdom: O'Reilly Media.

ASSIGNMENTS:
A practical take-home assignment will be provided after each session. The instructor will review potential solutions to the assignment from the preceding session before commencing a new one.

COURSE OUTLINE:

Week One:

Session 1
1. Overview of Python Programming Language
2. Setting Up Python and Python Environment on Windows/Mac/Linux
3. Using Integrated Development Environment (IDE)

Session 2
1. Variables, Data types and Booleans, Stings
2. Lists, Tuple, Dictionaries, Sets

Session 3
1. Live Code Solution to Take-Home Assignment.
2. Commenting, Prints and String Formatting
3. Loops, Conditional Statements

Week Two:

Session 1
1. Live Code Solutions to Take-Home Assignment.
2. Python Functions, Lambda
3. Working with Files in Python

Session 2
1. Live Code Solutions to Take-Home Assignment.
2. Object Oriented Programming (Overview)
3. Introduction to Python Modules (Packages)
4. Working Pandas, NumPy and SciPy Module

Session 3
1. Data Processing and Analysis with Pandas Package
2. Basic Statistics in Python
3. Data Visualization with Matplotlib and Seaborn Packages

TEACHING TIMES:
Teaching will be conducted synchronously (live) on Zoom. You will receive a Zoom link via email before each class. All lectures will be recorded and shared with the entire class.

Week 1
January 15th: Monday 10 am – 12 pm CT (4 pm – 6 pm UK)
January 17th: Wednesday 10 am – 12 pm CT (4 pm – 6 pm UK)
January 20th: Saturday 9 am – 11 am CT (3pm - 5pm UK)

Week 2
January 22nd: Monday 10 am – 12 pm CT (4 pm – 6 pm UK)
January 24th: Wednesday 10 am – 12 pm CT (4 pm – 6 pm UK)
January 27th: Saturday 9 am – 11 am CT (3pm - 5pm UK)