Course: **A Gentle Introduction to Coding and Algorithm Design Using Python: Applications in Simple Robotics and Drones**

Contact Hours: **30**

Pre-requisite: **Computer Literacy**

Description

This course aims to teach learners the basics of programming computers using Python. Students will learn how to construct a program from a series of simple instructions in Python. Students will also experience how basic programming knowledge can be applied to robotics. This course avoids all but the simplest mathematics, and anyone with moderate computer experience should be able to master the materials in this course.

Target Audience

This course is designed for individuals that are interested in the field of Python Programming

- Students
- Programmers
- IT Professionals

Learning outcomes

On completion of this course, learners will be able to:

- Describe the basics of the Python programming language
- Install Python and write your first program
- Use variables to store, retrieve and calculate information
- Utilize core programming tools such as functions and loops
- Use applied programming for basic robot controls and sensors

Course Content

1. Installation and setup of Python. Introduction to Python Syntax (how does Python code work)
2. Variables and Output (how do programs store simple values, and how can they be outputted to the screen)
3. Basic Mathematical Operators and Calculations (how do programs perform basic calculations)
4. Decisions and Logical Operators (how do programs make basic decisions)
5. Looping Constructs and Repetition (how and why do programs repeat actions)
6. Lists and List Processing (how do programs store data, and how can this data be used)
7. Functions (how to create reusable segments of code and how can they be utilized effectively)
8. Input and Casting (how do programs accept input from the user)
9. Basic robot controls using blockly and python (how do robots respond to simple commands, and how can data be obtained from sensors)
10. Applied programming for basic autonomous actions (how to program a robot to perform a sequence of basic actions on its own)