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ITC INNOVATION & TECHNOLOGY CENTRE

Innovation & Technology Center

Summer 2026

Section I: Overview:

COURSE TITLE	Python Fundamentals
INSTRUCTOR	Eng. Miriam Hani
CREDITS (Hours)	Total 20 hours- 4 hours/Day
PRE-REQUISITES/CO-REQUISITES	Basic programming
LANGUAGE	English
GRADING	Attended/Not Attended
LEARNING ENVIRONMENT	Computer Lab
NUMBER OF PARTICIPANTS	10 - 25
COURSE FEES	2000 EGP/Student

Section II: Background and Rationale:

Python is a key language for engineering, automation, data analysis, AI, and computer vision. This workshop develops practical programming skills through structured problem solving and technical applications. It covers core Python concepts, data structures, functions, object-oriented programming, and code organization. Participants will also use libraries such as NumPy, Matplotlib, and OpenCV for applied engineering tasks.

Section III: Learning Outcomes:

• Develop structured Python programs for solving technical and engineering problems.
• Apply Python data structures, control flow, loops, and functions in practical programming tasks.
• Use object-oriented programming concepts and modules to build reusable code.
• Apply NumPy, Matplotlib, and OpenCV for basic computer vision applications.

Section IV: Target Audience:

This workshop targets students with basic programming awareness who aim to apply Python in engineering projects, automation, data-driven applications, and computer vision.

Section V: Content and Structure:

DAY	TITLE	DETAILS
1	Python Basics	• Introduction to Python. • Data Types. • Variables. • Strings. • Arithmetic operators. • Comparison and Logic operators. • Comments
2	Python Data Structures	• Expressions and statements in Python. • Lists • Dictionary. • Tuples • Sets • Indexing and slicing
3	Control flow, loops and functions	• Conditional statements • For loops • Nested loops • Functions • Exception Handling
4	Object-Oriented Programming	• Object- Oriented Programming using Python. • Class – Modules • Hands-on python packages
5	Python Libraries	• Numpy & Matplotlib library. • OpenCV library