Course:	Computer Applications Lab – 0907311 (1 Cr. – Core Course)
Catalog Data:	Programming and computer packages for mathematical and symbolic manipulations (Python).
Prerequisites by Course:	1901102 Computer Skill II
Prerequisites by Topic:	Students are assumed to have had sufficient knowledge in computer programming and the basics of statistics calculus,
Textbook:	Python Crash Course: A Hands-on, Project-based Introduction to Programming, Erics Mathes,No starch Publisher, 2016
References:	Learning Python, Mark Lutz, O'Reilly, 5th Edition,2013
Course Website:	MS Teams
Schedule & Duration:	14 Weeks, 11 Lab sessions, 180 minutes each (including exams).
Minimum Student Material:	Text book, class handouts, some instructor keynotes, calculator and access to a personal computer and internet.
Minimum College Facilities:	Classroom with whiteboard and projection display facilities, library, and computational facilities.
Course Objectives:	This course introduces the students to Python as a powerful tool in the analysis, design, and solution of engineering problems.
Course Outcomes and Relation to ABET Program Outcomes:	Upon successful completion of this course, a student should be able to: 1. Use python to perform different types of mathematical operations. [1,2] 2. Use python to design and write programs that solves engineering problems. [1,2,6] 3.Use python to access, manipulate, and visualize data [1,2,6]
Course Topics:	The lab includes ten experiments that cover the following topics: 1. An overview of python installation and the use of Pycharm IDE 2. Programming with Python 3. Python basic data types and structure arrays 4. Control Statements 5. Functions and Files 6. Advanced plotting and model building 7. Numerical calculus 8. Data Analysis

Course Outline	**Week**	**Experiment**
	FEB 21, 2021	Syllabus distribution + Introduction to Python
	FEB 28, 2021	Data types and variables
	MAR 7, 2021	List and Dictionaries
	MAR 14, 2021	Control Statements
	MAR 21, 2021	Functions and Files
	MAR 28, 2021	Data Manipulation 1
	APR 4, 2021	***Midterm Exam (Practical)***
	APR 11, 2021	Data Manipulation 2
	APR 18, 2021	Plotting and Data Visualization
	APR 25, 2021	Advanced Python Packages
	TBA	**Project Submission and Discussion**
	TBA	**Final Exam**

Computer Usage: The lab will be taught remotely and the students are expected to use their own laptops to solve the labsheets and the project. The computers available in the lab will be used for the midterm and the final exams.

Attendance: Class attendance will be taken every class and the university's polices will be enforced in this regard.

Assessments:
Grading policy:

Labsheets	15%
Python Basics Certificate	5% (https://www.sololearn.com/Course/Python/)
Midterm Exam	30% Practical exam
Project	10%
Final Exam	40%

Instructors:
Class Time and
Location:

Dr.Mohammad Abdel-Majeed (M.abdel-Majeed@ju.edu.jo)
Section 1: Monday 1:00-4:00
Section 3: Wednesday 1:00 – 4:00

Dr.Ashraf Suyyagh (a.suyyagh@ju.edu.jo)
Section 2: Tuesday 1:30-4:30
Section 4: Thursday 1:30 – 4:30

Eng.Abeer Awad(a.awad@ju.edu.jo)

Program Outcomes (PO)

1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	an ability to communicate effectively with a range of audiences
4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies