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<b>Course:</b>	Computer Applications Lab – 0907311 (1 Cr. – Core Course)
<b>Catalog Data:</b>	Programming and computer packages for mathematical and symbolic manipulations (Python).
<b>Prerequisites by Course:</b>	1901102 Computer Skill II
<b>Prerequisites by Topic:</b>	Students are assumed to have had sufficient knowledge in computer programming and the basics of statistics calculus,
<b>Textbook:</b>	Python Crash Course: A Hands-on, Project-based Introduction to Programming, Eric Matthes, No starch Publisher, 2016
<b>References:</b>	Learning Python, Mark Lutz, O'Reilly, 5th Edition, 2013
<b>Course Website:</b>	MS Teams
<b>Schedule &amp; Duration:</b>	14 Weeks, 11 Lab sessions, 180 minutes each (including exams).
<b>Minimum Student Material:</b>	Text book, class handouts, some instructor keynotes, calculator and access to a personal computer and internet.
<b>Minimum College Facilities:</b>	Classroom with whiteboard and projection display facilities, library, and computational facilities.
<b>Course Objectives:</b>	This course introduces the students to Python as a powerful tool in the analysis, design, and solution of engineering problems.
<b>Course Outcomes and Relation to ABET Program Outcomes:</b>	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]
<b>Course Topics:</b>	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
	Oct 11, 2020	Lab preparation
	Oct 18, 2020	Syllabus distribution + Introduction to Python
	Oct 25, 2020	Data types and variables
	Nov 1, 2020	List and Dictionaries
	Nov 8, 2020	Control Statements
	Nov 15, 2020	Functions and Files
	Nov 22, 2020	Data Manipulation 1
	Nov 29, 2020	<b>Midterm Exam (Practical)</b>
	Dec 6, 2020	Data Manipulation 2
	Dec 13, 2020	Plotting and Data Visualization
	Dec 20, 2020	Advanced Python Packages
	<b>Dec 27, 2020</b>	<b>Project Submission and Discussion</b>
	<b>TBA</b>	<b>Final Exam</b>

**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 policies will be enforced in this regard.

**Assessments:**

**Grading policy:**

Labsheets	15%
Python Basics Certificate	5% ( <a href="https://www.sololearn.com/Course/Python/">https://www.sololearn.com/Course/Python/</a> )
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](mailto:M.abdel-Majeed@ju.edu.jo) )  
 Section 1: Monday 1:00-4:00  
 Section 2: Tuesday 1:30 – 4:30

Dr.Ashraf Suyyagh ([a.suyyagh@ju.edu.jo](mailto:a.suyyagh@ju.edu.jo) )  
 Section 3: Sunday 1:30-4:30  
 Section 4: Thursday 1:30 – 4:30

Eng.Abeer Awad( [a.awad@ju.edu.jo](mailto: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