



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, Eric Matthes, No starch Publisher, 2016
References:	Learning Python, Mark Lutz, O'Reilly, 5th Edition, 2013
Course Website:	MS Teams
Schedule & Duration:	14 Weeks, 9 Lab sessions, 180 minutes each
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, Jupyter notebook. 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

Jul 12, 2023	Syllabus distribution + lab1 Introduction to Python
Jul 16, 2023	Lab2 Data types and variables
Jul 19, 2023	Lab3 List and Dictionaries
Jul 23, 2023	Lab4 Control Statements
Jul 26, 2023	Lab5 Functions and Files
Jul 30, 2023	Lab6 Data Manipulation 1
Aug 2, 2023	Midterm Exam (Practical)
Aug 6, 2023	Lab7 Data Manipulation 2
Aug 9, 2023	Lab8 Plotting and Data Visualization
Aug 13, 2023	Project Announcement
Aug 20, 2023	Project Submission
TBA	Final Exam

Computer Usage:

The lab will be taught on campus and the students are expected to their own laptops to solve the post lab part of 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%
https://www.sololearn.com/learn/courses/python-intermediate	
Midterm Exam	30% Practical exam
Project	10%
Final Exam	40%

Instructors:

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

Class Time and

Section 1: Sun-Wed 12:15 – 15:15 (Eng. Abeer)

Location:

Computer applications laboratory

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