**The University of Jordan**
**School of Engineering**
**Department of Computer Engineering**
**Fall Term – A.Y. 2025-2026**

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| **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, 8 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:<br>1. Use Python to perform different types of mathematical operations. [1,2]<br>2. Use Python to design and write programs that solves engineering problems. [1,2,6]<br>3.Use Python to access, manipulate, and visualize data [1,2,6] |
| **Course Topics:** | The lab includes experiments that cover the following topics:<br>1. An overview of Python installation and the use of Pycharm IDE,Jupyter notebook.<br>2. Programming with Python.<br>3. Python basic data types and structure arrays.<br>4. Control Statements.<br>5. Functions and Files.<br>6. Advanced plotting and model building.<br>7. Numerical calculus.<br>8. Data Analysis. |

## Course Outline

| Week | Experiment |
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| 12/10/2025 | Syllabus distribution + lab1 Introduction to Python |
| 19/10/2025 | Lab2 Data types and variables |
| 26/10/2025 | Lab3 List and Dictionaries |
| 02/11/2025 | Lab4 Control Statements |
| 09/11/2025 | Lab5 Functions and Files |
| 16/11/2025 | Lab6 Data Manipulation |
| 23/11/2025 | **Midterm Exam** |
| 30/11/2025 | **No Lab** |
| 07/12/2025 | Lab7 Pandas |
| 14/12/2025 | Lab8 Plotting and Data Visualization |
| 21/12/2025 | **Project Announcement** |
| 28/12/2025 | **Project Submission** |
| 04/01/2026 | **Review** |
| 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 lab sheets 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:

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| Labsheets | 15% | |
| Python Basics Certificate (https://www.sololearn.com/learn/courses/python-intermediate) | 5% | |
| Midterm Exam | 30% | Practical exam |
| Project | 10% | |
| Final Exam | 40% | |

## Instructors:

Dr Talal A. Edwan (t.edwan@ju.edu.jo)
Eng. Alaa Arabiyat (a.arabiyat@ju.edu.jo)
Eng. Abeer Awad (a.awad@ju.edu.jo)

## Class Time and

Section 1: Sunday 13:30 – 16:30 (Eng. Alaa)
Section 2: Monday 13:00 – 16:00 (Eng. Abeer)
Section 3: Thursday 13:30 – 16:30 (Eng. Alaa)

## Location:

Computer Applications LAB this semester is in Computer Networks LAB.

## Program Outcomes (PO)

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| 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 |