



Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Science Department

CS412 Advanced Topics In Programming

Summer Semester 2022-2023

Course Catalog

3 Credit Hours. This course is designed to introduce students to Python programming language. Students will explore the concepts of programming and scripting, including basic syntax, variables, logical structures, and debugging. The course emphasizes structured programming, algorithmic and object thinking in a problem-driven way after teaching fundamental concepts and structures. Key topics include elementary programming, data types, strings, selections, iteration, functions, GUIs (graphical user interfaces), object-oriented paradigm, lists, sets and dictionaries, files, exceptions and recursion. By the end of the course, students will have a solid foundation in programming and gain practical experience in applying several techniques in practical tasks using various Python libraries.

Text Book

Title	Introduction to Programming Using Python
Author(s)	Y. Daniel Liang
Edition	1st Edition
Short Name	Textbook 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Textbook 2	Python Crash Course: A Hands-On, Project-Based Introduction to Programming	Eric Matthes	3rd Edition	
Ref 1	Introduction to Computation and Programming Using Python	John V. Guttag	3rd Edition	
Ref 2	Think Python: How to Think Like a Computer Scientist	Allen Downey 2nd Edition	2nd Edition	

Instructor

Name	Dr. Ahmad Alzubi
------	------------------

Office Location	-
Office Hours	
Email	agalzubi@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: A2125

Prerequisites		
Line Number	Course Name	Prerequisite Type
1732112	CS211 Data Structures	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Basics of Python Programming	Chapter 2 From Textbook 1 , Chapter 1 From Textbook 2
Week 2	Selections and Loops	Chapter 4 & 5 From Textbook 1 , Chapter 5 & 7 From Textbook 2
Week 3	Introducing Lists, Tuples, and Dictionaries	Chapters 10, 11, 14 From Textbook 1 , Chapters 3, 4, 6 From Textbook 2
Week 4	Functions	Chapters 3 & 6 From Textbook 1 , Chapter 8 From Textbook 2
Week 5	Object-Oriented Programming	Chapter 7 From Textbook 1 , Chapter 9 From Textbook 2
Week 6	GUI Programming Using Tkinter	Chapter 9 From Textbook 1
Week 7	Files and Exception Handling	Chapter 13 From Textbook 1 , Chapter 10 From Textbook 2
Week 7	Pygame	Chapter 12 From Textbook 2

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Introduce Python programs with selection and iteration structures. [14SO1]	14%	
Define functions and pass arguments in Python. [13SO1]	13%	
Learn how to use lists, tuples, and dictionaries in Python programs. [13SO1]	13%	
Discuss the fundamental principles of Object-Oriented programming. [10SO1]	10%	

Learn how to practice GUI Programming with Tkinter libraries, read and write files, and handle exceptions. [20SO1]	20%	
Implement Python projects using various libraries and tools, including Pygame, Numpy, matplotlib, scikit-learn, and Pygal. [15SO6]	15%	
Gain LAB experience and practical techniques using Python to solve problems, explore real-world software development challenges, and create practical and contemporary applications. [15SO6]	15%	

Relationship to Program Student Outcomes (Out of 100%)					
SO1	SO2	SO3	SO4	SO5	SO6
70					30

Evaluation	
Assessment Tool	Weight
Midterm Exam	30%
Final Exam	40%
Pygame Project	15%
LAB Work	15%

Policy	
Attendance	Attendance is very important for the course. In accordance with university policy, students missing more than 20% of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.
Assignments	Cheating is prohibited under JUST strict laws. No late submissions are accepted.
Exams	The format of exams is theoretical and practical including multiple-choice and problem solving questions.
LAB Quizzes	No makeup.

Date Printed: 2023-07-15