1.	Course title	Programming Techniques in Special Languages
2.	Course number	1901239
3.	Credit hours (theory, practical)	3 (theory + practical)
	Contact hours (theory, practical)	3 (theory + practical)
4.	Prerequisites/corequisites	Data Structures -1 (1901233)
5.	Program title	Computer Science
6.	Year of study and semester (s)	Second/Third Year- Second Semester
7.	Final Qualification	Bachelor (Bsc)
8.	Other department (s) involved in teaching the course	-
9.	Language of Instruction	English
10.	Date of production/revision	October. 2022
11.	Required/ Elective	Elective

12. Course Coordinator:

Prof. Ahmad Sharieh
Office number: 105
Office hours: Sundays, Tuesdays (11:00 – 12:00), Monday (12:00- 13:00)
Phone number: 22591
Email address: shareih@ ju.edu.jo

13. Other instructors:

N/A

14. Course Description:

This course aims to equip the students with knowledge and skills necessary to build robust programs which includes defensive programming techniques (error handling, exceptions, assertions, debugging aids), current programming trends (functional and/or scripting), code testing, and tuning strategies and techniques. In addition to Problem solving techniques. Object Oriented Programming concepts using C++, Java, or Python.

15. Course aims and outcomes:

A- Aims:

This course aims to equip students with necessary skills to write robust computer programs using Python programing language. It aims to introduce students to Python scripting language and to teach them the use of proper coding style, documentation strategies and practical and rigor code testing. The course provides students with various real-life applications and introduces them to a number of problem-solving techniques.

B- Intended Learning Outcomes (ILOs):

A. Knowledge and understanding: Students should

A1) learn the fundamentals of Python programing languages
A2) understand the control in the form of selection and repetition
A3 understand how to work with strings and files in python
A4) understand the implementation of various data structures
A5) understand the implementation of functions, classes, and modules and packages
A6) understand the implementation of error-handling techniques to promote defensive coding
A7) identify proper coding techniques to write clean and testable code
A8) understand how to use python to carry out data analytics and to access web data and APIs

B. Intellectual skills: with the ability to

B1) distinguish between various programing paradigms
B2) distinguish between various data structures in Python
B3) distinguish between different error-handlining techniques
B4) improve the technical skills by writing robust code that can adapt to unforeseen circumstances

C. Subject specific skills: with ability to

C1) design and write a complete Python application using the best practices and incorporating proper error handling techniques.
C2) solve real-life problems by writing a clean and documented python code incorporating a comprehensive set of features.

D. Transferable skills: with ability to

D1) work in a team to deliver a high quality project using all learned techniques, and to demonstrate their work through a presentation.

16. Topic Outline and Schedule:

Topic	Week	ILOs	Program SOs[1]	TLA (teaching, learning and Assessment)
Python fundamentals	1	A1, B1	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 1**) **A**: quizzes and exams (practical and theoretical)
Control(Selection+ Repetition)	2	A2	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 2**) **A**: quizzes and exams (practical and theoretical)
Working with Strings and Files	3	A3	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 4**) **A**: quizzes and exams (practical and theoretical)
Data Structures -List and Tuples	4	A4, B2	1,2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 7**) **A**: quizzes and exams (practical and theoretical)
Data Structures - Dictionaries and Sets	5	A4, B2	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 9**) **A**: quizzes and exams (practical and theoretical)
Introduction to Classes and OOP	6	A5	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 11**) **A**: quizzes and exams (practical and theoretical)
Modules and Packages	7	A5	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 14+ external resources**) **A**: quizzes and exams (practical and theoretical)
Midterm Exam	8	A1 - 5, B1 - 2	1, 2, 6	**L:** Topics: **Chapters 1,2,4,7, and 9** **A**: T/F, Multiple, Short Answers, Writing code
Exceptions (I)	9	A6 – 7, B3	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 5**) **A**: quizzes and exams (practical and theoretical)
Exceptions (II)	10	A6 – 7, B3	1, 2	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**chapter 14**) **A**: quizzes and exams (practical and theoretical)
Assertions + **Quiz**	11	A6 – 7, B3	1, 2, 6	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**external resources**) **A**: quizzes and exams (practical and theoretical)
Python for Data Analysis	12	A8, B4, C1 -2	1, 2, 6	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**external resources**) **A**: quizzes and exams (practical and theoretical)
Access Web data and APIs	13	A8, B4, C1 – 2	1, 2, 6	**T**: Lecture, Lab exercises and Discussion **L**: Reading from Textbook (**external resources**) **A**: quizzes and exams (practical and theoretical)
Projects presentations	14	A,B,C,D	1 - 6	**A:** Project presentations
Projects presentations	15	A,B,C,D	1 - 6	**A**: Project presentations

[1] The ABET outcomes

17. Evaluation Methods and Course Requirements (Optional):

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
Midterm	25	Python Overview	8	JUExam
Quiz	5	Error Handling	11	MOODLE
Practical Project/ Assignments	20	-	14-15	MOODLE
Final	50	All topics	16	JUExam

18. Course Policies:

A- Attendance policies:

Deliberate abstention from attending 1901239 classes and any other similar acts will lead to student deprivation from the course according to the UJ regulations.

B- Absences from exams and submitting assignments on time:

If you miss the midterm, then a makeup exam will not be provided unless you submit a valid absence excuse, within three days from the midterm, to your lecturer. This excuse must be signed and stamped from the UJ hospital in order to be valid. If your lecturer accepts the excuse, then you will be able to take the makeup. You need to follow up the departmental announcements regarding the makeup date and time. Please note that the lecturer may either accept or reject your excuse based on UJ regulations

C- Health and safety procedures:

N/A

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All students in this course must read the University policies on plagiarism and academic honesty

http://registration.ju.edu.jo/RegRegulations/Forms/All_Regulations.aspx

E- Grading policy:

- Quiz 5%
- Midterm 25%
- Project+ Assignment 20%
- Final Exam: 50%

F- Available university services that support achievement in the course:

N/A

G- Statement on Students with disabilities

Students with Disabilities: Students with disabilities who need special accommodations for this class are encouraged to meet with the instructor and/or their academic advisor as soon as possible. In order to receive accommodations for academic work in this course, students must inform the course instructor and/or their academic advisor, preferably in a written format, about their needs no later than the 4th week of classes.

19. Required equipment:

Each student must have a PC connected and must install the latest versions of Jupytor Notebook and PyCharm software.

20. References:

A- Required book(s), assigned reading and audio-visuals:

Textbook: The Practice of Computing using Python 3, 3rd edition by William Punch and Richard Enbody; Addison-Wesley.

B- Recommended books, materials and media:

Online resources: https://docs.python.org/3.8/tutorial/

IDEs: Jupyter Notebook and PyCharm.

21. Additional information:

N/A

Date: **October 2022**

Name of Course Coordinator: **--Prof. Ahmad Sharieh**----------Signature: *Ahmad Sharieh*

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Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------

Copy to:
Head of Department
Assistant Dean for Quality Assurance