

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Artificial Intelligence Department
----------------	--

Study plan No.	2022/2032		University Specialization		Artificial Intelligence	
Course No.	0142223		Course name		Data Science and Artificial Intelligence programming 1	
Credit Hours	3 hours		Prerequisite Co-requisite		Programming principles	
Course type	<input type="checkbox"/> MANDATORY UNIVERSITY REQUIREMENT	<input type="checkbox"/> UNIVERSITY ELECTIVE REQUIREMENTS	<input type="checkbox"/> FACULTY MANDATORY REQUIREMENT	<input type="checkbox"/> Support course family requirements	<input checked="" type="checkbox"/> Mandatory requirements	<input type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning		<input type="checkbox"/> Blended learning		<input checked="" type="checkbox"/> Traditional learning	
Teaching model	<input type="checkbox"/> 2 Synchronous: 1asynchronous		<input type="checkbox"/> 2 face to face : 1synchronous		<input checked="" type="checkbox"/> 3 Traditional	

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Nesreen Hamad	Instructor	9316		nesreen.hamad@zuj.edu.jo	
Division number	Time	Place	Number of students	Teaching style	Approved model
1	9:30-11 Sundays, Tuesdays		21	Traditional	

Brief description

This course presents the python language to write scripts by applying basic and advanced concepts such as variables, conditional statements, strings, methods, lists, tuples dictionaries etc. Additionally, understanding the fundamentals of object-oriented programming in Python.
---

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	Paul Deitel and Harvey Deitel, "Intro to Python for Computer Science and Data Science: Learning to Program with AI, Big Data and the Cloud", Pearson Education, 2020.				
Supportive learning resources (Books, databases, periodicals, software, applications, others)	<ol style="list-style-type: none"> <li>Dan Bader, Joanna Jablonski and Fletcher Heisler, "Python Basics: A Practical Introduction to Python 3", 4<sup>th</sup> ed, Ron Holland Designs, 2021.</li> <li>John Hunt, "A Beginners Guide to Python 3 Programming", Springer International Publishing, Aug 13, 2019</li> <li>John V. Guttag, "Introduction to Computation and Programming Using Python with Application to Understanding Data", MIT press, 2017</li> </ol>				
Supporting websites	<a href="https://docs.python.org/">https://docs.python.org/</a>				
The physical environment for teaching	<input checked="" type="checkbox"/> Class room	<input type="checkbox"/> labs	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others	
Necessary equipment and software	PyCharm : <a href="https://www.jetbrains.com/pycharm/">https://www.jetbrains.com/pycharm/</a> Or Anaconda: <a href="https://www.anaconda.com/">https://www.anaconda.com/</a>				
Supporting people with special needs	-----				
For technical support	-----				

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Artificial Intelligence Department
----------------	--

Course learning outcomes (S= Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
<b>Knowledge</b>		
K1	Understand the fundamentals of python such as variables, conditional statements, and functions.	MK2
K2	Processing Strings and Sequences.	MK2
K3	Understand the fundamentals of object-oriented programming in Python.	MK2
<b>Skills</b>		
S1	Knowledge of the structure and model of the Python programming language.	MS2
S2	Use the Python programming language for various programming applications.	MS2
S3	Develop software in the Python programming language using OOP and compare it with OOP in Java.	MS2
<b>Competences</b>		
C1	The ability to write basic python scripts.	MC1
C2	The ability to process strings.	MC1
C3	The ability to write scripts using lists, tuples and Dictionaries.	MC1
C4	The ability to apply OOP concepts in Python.	MC1

Mechanisms for direct evaluation of learning outcomes

Type of assessment/learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First exam	0	0	%20	0
Second / midterm exam	%30	%30	%20	30%
Participation / practical applications	0	0	10	30%
Asynchronous interactive activities	%30	%30	0	0
final exam	%40	%40	%50	40%

**Note:** Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	<b>Introduction to Python Programming</b> Variables and Assignment Statements Arithmetic Function print and an Intro to Single- and Double-Quoted Strings Triple-Quoted Strings Getting Input from the User	Lectures	49-59
2	<b>Control Statements and Program Development</b> Comparison Operations Logical Operators Selection Control Statements	Lectures	73-119
3	If statements applications For loop and applications Else with loops	Lectures	73-119
4	While loops	Lectures	73-119

QF01/0408-4.0E		Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Artificial Intelligence Department	
	nested loops		
5	<b>Strings: A deeper look</b> String concatenation in operator string indexing and slicing	Lectures	238-250
6	string built in functions Applications		238-250
7	<b>Functions</b> Functions in python (math functions) User defined functions Variables Scope	Lectures	119-150
8	Keywords arguments Default arguments Random function Lambda function <b>Midterm Exam</b>	Lectures	119-150
9	<b>Sequences: Lists and Tuples</b> Declaring lists Filling lists by using append Some lists functions and methods	Lectures	155-199
10	List comprehensions Processing 2d lists Passing lists to functions	Lectures	155-199
11	Tuples Applications	Lectures	155-199
12	<b>Dictionaries and Sets</b> Creating a Dictionary Iterating through a Dictionary Basic Dictionary Operations	Lectures	209-215
13	Dictionary Methods keys and values Applications on dictionaries	Lectures	209-215
14	<b>Object-Oriented Programming</b> Defining classes in Python Instantiating an object Access Modifiers in python	Lectures	355-375
15	Inheritance Applications	Lectures	355-375
16	<b>Final Exam</b>		

\* **Learning styles:** Lecture, flipped learning, learning through projects, learning through problem-solving, participatory learning ... etc.

\*\* **Reference:** Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.