Course Name	Programming Techniques in AI		أساليب البرمجة في الذكاء الاصطناعي	
Course Information	Course Code	Course No.	Credit Hour	Prerequisite(s)
	0911-1662	662	3 (3-0-6)	---
Course Track	☒ Program Core		☐ Electives	

Course Description. This course aims to provide appropriate computing background to students who will study other courses in Data Science, Machine Learning and AI. It uses the Python language as the main vehicle but focusses on conceptual material rather than just the language itself. It moves fast through introductory Python workings. It covers several important Python libraries in detail. It discusses approaches to build re-usable, high quality code but not on software engineering. It also visits some extra topics such as version control and programming language for statistics. Student will learn core Python language concepts, work with the key Python libraries for AI and get a strong understanding on how Python is used for the development of AI and data analysis applications. This course cover topics like: installing the essential packages to create an AI and data analysis coding environment, understanding the basic functions, data structures, and syntax of the Python language that are used to handle large datasets with ease, using NumPy, SciPy and pandas libraries for matrix calculations and data manipulation, studying how to use Matplotlib to create highly customizable visualizations. It also introduces the main machine learning libraries like scikit-learn, PyTorch, Tensorflow, and many examples, testing, notebooks, cloud execution. It will utilize up-to-date versions of software.

Course Outcomes. After the completion of this course, the student will be able to:

1. **Understand** the core Python concepts as well as the important libraries used in AI and data analysis. **[A, E]**
2. **Demonstrate** awareness and a fundamental understanding of various applications of AI algorithms and data analysis techniques. **[E]**
3. **Implement** a set of AI algorithms and data analysis techniques using the Python programing language and the related libraries. **[D, E]**
4. **Use** the appropriate tools to handle and visualize different forms of data. **[E]**

Assessment Policy (PC)	Assignments	15%	Quiz	--	Capstone Project	40 %
	Midterm	15%	Final Exam	30 %		

Textbook	Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and Python", 2nd Edition, O'Reilly Media, 2017. ISBN-13: 978-1491957660.
References	1. Alberto Artasanchez and Prateek Joshi, "Artificial Intelligence with Python", 2nd Edition, Packt Publishing, 2020. ISBN-13: 978-1839219535. 2. Rohan Chopra, Aaron England and Mohamed Alaudeen, "Data Science with Python", Packt Publishing, 2019. ISBN-13 978-1838552862. 3. Joshua Eckroth, "Python Artificial Intelligence Projects for Beginners", Packt Publishing, 2018. ISBN-13: 978-1789539462.