



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

AI350 Data Science - JNQF Level: 7

Second Semester 2024-2025

Course Catalog

3 Credit Hours. This course provides an applied approach to data science, covering the full data science workflow, including data collection, preprocessing, analysis, visualization, and model deployment. The focus will be on real-world datasets, case studies, and practical implementation. By the end of this course, students will be able to: Understand and implement the data science workflow from data collection to deployment. Perform data wrangling, feature engineering, and exploratory data analysis (EDA). Work with various types of data, including structured and unstructured data. Evaluate and improve model performance using advanced techniques. Deploy machine learning models and integrate them into applications. Work on real-world data science problems and present findings effectively.

Teaching Method: On Campus

Instructor

Name	Dr. Malak Abdullah
Office Location	A1-L3
Office Hours	
Email	mabdullah@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue, Thu : 13:00 - 14:00
Room: SF08

Prerequisites

Line Number	Course Name	Prerequisite Type
1793280	AI328 Big Data Processing	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
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Week 1	Introduction to data science	
Week 2	Machine learning Revision + How to Write a Scientific Research Paper for Data Science Projects	
Week 3	Advanced Data Preprocessing and Feature Engineering	
Week 4	Exploratory Data Analysis (EDA) + Model Interpretability and Explainability	
Week 5	Data Visualization and Dashboards	
Week 6	Working with Real-World Data and Big Data	
Week 7	Model Deployment & MLOps Basics	
Week 8	Recommender Systems + Time Series Analysis	
Week 9	Federated Learning + AutoML	
Week 10	Bias and Fairness in Machine Learning Models	
Week 11	Active Learning + Edge AI + Geospatial Data Analysis	
Week 12	Quantum Machine Learning + Reinforcement Learning	
Weeks 13, 14	Research Presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand Data Science Concepts: Define key data science terms, techniques, and methodologies, including data cleaning, analysis, and machine learning. [1SO1] [1L7K1]	40%	
Conduct Research: Review literature, design experiments, and write a research paper on a data science topic. [1SO2] [1L7S1]	25%	
Develop & Deploy Models: Train, evaluate, and deploy machine learning models using industry-standard tools. [1SO2] [1L7S1]	10%	
Communicate Effectively: Present and explain complex data science topics to peers in a clear, concise manner, demonstrating both technical and non-technical communication skills [1SO2] [1L7S1]	15%	
Demonstrate Continuous Learning: Engage with course material through daily quizzes, reflecting the ability to retain and apply key concepts across various data science techniques [1SO1] [1L7K1]	10%	

Relationship to Program Student Outcomes (Out of 100%)					
SO1	SO2	SO3	SO4	SO5	SO6
50	50				

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S1
50	50

Evaluation	
Assessment Tool	Weight
Research Paper	25%
Quizzes	10%
Presentation	15%
In lab project	10%
Final exam	40%

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