



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

DS101 Fundamentals Of Data Science

First Semester 2022-2023

**Course Catalog**

3 Credit Hours. This course provides students with key concepts in data science. Specific topics include: definition of data science and its relationships with other fields; importance of data science and its driving forces; data acquisition and exploration; data profiling; data cleaning; data quality; feature selection taking into consideration structured and unstructured data; model selection (including data sampling, split methods between training data and test data, and overfitting); result analysis and visualization of data and results.

**Text Book**

<b>Title</b>	The Data Science Design Manual
<b>Author(s)</b>	Steven S. Skiena
<b>Edition</b>	1st Edition
<b>Short Name</b>	Ref#1
<b>Other Information</b>	ISBN 9783319554433

**Instructor**

<b>Name</b>	<b>Dr. Ahmad Mustafa</b>
<b>Office Location</b>	-
<b>Office Hours</b>	Mon : 10:00 - 11:30 Tue : 11:00 - 13:00 Wed : 10:00 - 11:30 Thu : 11:30 - 12:30
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**Instructor**

<b>Name</b>	<b>Prof. SHADI ALJAWARNEH</b>
<b>Office Location</b>	N2 L-0; Engineering Buildings

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<b>Class Schedule &amp; Room</b>
<p>Section 2: Lecture Time: Sun, Tue, Thu : 11:30 - 12:30 Room: A3128</p> <p>Section 4: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: C3014</p>

<b>Tentative List of Topics Covered</b>		
<b>Weeks</b>	<b>Topic</b>	<b>References</b>
Week 1	INTRODUCTION TO DATA SCIENCE	From <b>Ref#1</b>
Week 2	MATHEMATICAL PRELIMINARIES	From <b>Ref#1</b>
Weeks 2, 3	PYTHON FOR DATA SCIENCE I	From <b>Ref#1</b>
Weeks 3, 4	PYTHON FOR DATA SCIENCE II	From <b>Ref#1</b>
Week 5	CORRELATION AND MUNGING	From <b>Ref#1</b>
Weeks 6, 7	SCORES AND RANKINGS	From <b>Ref#1</b>
Weeks 7, 8	STATISTICAL DISTRIBUTIONS I	From <b>Ref#1</b>
Week 9	STATISTICAL SIGNIFICANCE	From <b>Ref#1</b>
Week 10	PRINCIPLES OF VISUALIZING DATA	From <b>Ref#1</b>
Week 11	BUILDING MODELS	From <b>Ref#1</b>
Week 12	VALIDATING MODELS	From <b>Ref#1</b>
Week 13	CLUSTERING	From <b>Ref#1</b>
Weeks 14, 15	MACHINE LEARNING	From <b>Ref#1</b>
Week 16	TOPICS IN MACHINE LEARNING	From <b>Ref#1</b>

<b>Mapping of Course Outcomes to Program Student Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>

The ability to find, acquire, and transform datasets into analysis-ready format.	20%	Mid Exam, Assignment 1, Quizzes, Final Exam
A basic understanding of common experimental and evaluation techniques for data science	20%	Mid Exam, Assignment 1, Quizzes, Final Exam
The ability to answer data science questions by selecting, applying, and analyzing the results of statistical and machine learning tools such as clustering, classification, regression, and dimensionality reduction	40%	Mid Exam, Assignment 1, Quizzes, Final Exam
The ability to apply exploratory data analysis techniques such as sampling, summary statistics, and basic visualization	20%	Mid Exam, Assignment 1, Quizzes, Final Exam

<b>Evaluation</b>	
<b>Assessment Tool</b>	<b>Weight</b>
Mid Exam	30%
Assignment 1	10%
Quizzes	10%
Final Exam	50%

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