



Faculty: Information Technology	
Department: Data Science and Artificial Intelligence	Program: Bachelor
Academic Year:	Semester:

Course Plan

First: Course Information

Course No.: 1505333	Course Title: <i>Data Science and Analytics</i>	Credit Hours: 3	Theoretical: 3	Practical: 0
Prerequisite No. and Title: 1501222, Database systems		Section No.:	Lecture Time:	
Level in JNQF	7			
Type Of Course:	<input type="checkbox"/> <i>Obligatory University Requirement</i> <input type="checkbox"/> <i>Elective University Requirement</i> <input type="checkbox"/> <i>Obligatory Faculty Requirement</i> <input type="checkbox"/> <i>Elective Faculty Requirement</i> <input checked="" type="checkbox"/> <i>Obligatory Specialization Requirement</i> <input type="checkbox"/> <i>Elective Specialization Requirement</i> <input type="checkbox"/> <i>Ancillary course</i>			
Type of Learning:	<input checked="" type="checkbox"/> <i>Face-to-Face Learning</i> <input type="checkbox"/> <i>Blended Learning (2 Face-to-Face + 1 Asynchronous)</i> <input type="checkbox"/> <i>Online Learning (2 Synchronous+ 1 Asynchronous)</i>			

Second: Instructor's Information

Course Coordinator					
Name:			Academic Rank:		
Office Number:		Extension Number:		Email:	
Course Instructor					
Name:			Academic Rank:		
Office Number:		Extension Number:		Email:	
Office Hours:	<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>

Third: Course Description

This course introduces the ideas and techniques of data science, allowing students to easily develop a firm understanding of the subject and obtain all the knowledge required to work with many types of data, including statistical data. The goal of the course is to give students an in-depth knowledge of the many strategies, skills, techniques, and tools required to work with firm data. Specialized knowledge and teaching in programming, algorithms, statistics, and other analytical areas are provided by course. Students are taught the skills necessary to identify the problems that need to be solved and support the making of important decisions.

Fourth: Course Objectives

1. Describe the concept of data science, its significance, and the local and global effects it has on people, organizations, and society. The significant overlap between artificial intelligence and data science, as well as an overview of their theories and practical uses.
2. Describe the various data categories in detail, along with their significance to data science.
3. Describe the basic concepts and theories of statistics for Business Analytics and Data Science so that advanced and developing data science projects can be analyzed and resolved.
4. Demonstrate how raw data is transformed into an understandable form for further analysis through the process of data preprocessing.
5. Using an analytical challenge in a practical project to show data science projects' outcomes, knowledge, abilities, and new ideas.

Fifth: Learning Outcomes

<i>Level descriptor according to (JNQF)</i>	<i>CILOs Code</i>	<i>CILOs</i> If any CLO will not be assessed in the course, mark NA.	<i>Associated PILOs Code</i> Choose one PILO for each CILO*	<i>Assessment method</i> Choose at least two methods
Knowledge	K1	Explain the concept and importance of data science and the local and global impact of data science on individuals, organizations, and society.	PK2	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	K2	Describe the considerable overlap between data science and artificial intelligence and outline their concepts and applications in real life.	PK2	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	K3	Explain the categories of data and their importance in data science.	PK4	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	K4	Explain Statistics for Business Analytics and Data Science	PK4	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	K5	Explain modeling in data science.	PK4	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam

Skills	S1	Illustrate the basic concepts in statistics that are used in data science to analyze and solve complex and emerging data science projects.	PS2	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	S2	Illustrate the statistical theory that is used to evaluate and interpret data science solutions to meet a given set of requirements in the context of any project in data science.	PS3	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	S3	Illustrate statistical analysis to design and implement hypotheses to meet data science project requirements.	PS3	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	S4	Illustrate the data preprocessing process of transforming raw data into a format that is understandable and useful for additional analysis.	PS3	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
	S5	Applying an analytic challenge to a real-life project to demonstrate the results, knowledge, skills, and advanced principles to serve data science projects.	PS4	<ul style="list-style-type: none"> • Mid-term Exam • Final Exam
Competencies	C1	Create several groups of students, and each one of these groups will present some of the real-life applications that use the data science process.	PC1	<ul style="list-style-type: none"> • Participation
	C2	Create some groups of students where each one of them will use their creative thinking to contribute to the advancement of data science through innovative ideas and projects.	PC4	<ul style="list-style-type: none"> • Participation

*CILOs: Course Intended Learning Outcomes; PILOs: Program Intended Learning Outcomes; For each CILO, the PILO could be the same or different.

Sixth: Learning Resources

Main Reference:	<i>A Hands-On Introduction to Data Science</i>		
Author: Chirag Shah	Issue No.: First	Print:	Publication Year: 2020
Additional Sources and Websites:			
Teaching Type:	<input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input checked="" type="checkbox"/> MS Teams <input checked="" type="checkbox"/> Moodle		

Seventh: Course Structure

Weeks	Course Intended Teaching Outcomes (CILOs)	Topics	Teaching Procedures*	Teaching Methods**	References***
Week 1	K1	Introduction to Data Science	Face-to-Face	Lecture, In-class Questions	Chapter 1
Week 2	K2	Introduction to Data Science	Face-to-Face	Lecture, In-class Questions	Chapter 1
Week 3	K3	Data Type	Face-to-Face	Lecture, In-class Questions	Chapter 2
Week 4	K3	Traditional Data and Big Data	Face-to-Face	Lecture, In-class Questions	Chapter 2
Week 5	K4, S1	Statistics for Business Analytics & Data Science	Face-to-Face	Lecture, In-class Questions	Chapter 3
Week 6	K4, S2, S3	Population and Samples, and Sampling Distribution	Face-to-Face	Lecture, In-class Questions	Chapter 4
Week 7	K4, S2, S3	Central Limit Theorem, Z-Score	Face-to-Face	Lecture, In-class Questions	Chapter 4
Week 8	K4, S2, S3	Hypothesis Testing, Proportion Testing	Face-to-Face	Lecture, In-class Questions	Chapter 5
Midterm Exam 04/14/2024 – 04/25/2024					
Week 9	K4, S5	Analytics Challenge	Face-to-Face	Lecture, In-class Questions	Chapter 5
Week 10	K4	Modelling in Data Science	Face-to-Face	Lecture, In-class Questions	Chapter 6
Week 11	K4	Modelling in Data Science	Face-to-Face	Lecture, In-class Questions	Chapter 6
Week 12	S4	Biases	Face-to-Face	Lecture, In-class Questions	Chapter 7
Week 13	S4	Data Preprocessing	Face-to-Face	Lecture, In-class Questions	Chapter 7
Week 14	C1, C2	Presentation	Face-to-Face	Lecture, In-class Questions	-
Final Exam 02/06/2024-13/06/2024					

*Teaching procedures: (Face-to-Face, synchronous, asynchronous).

** Teaching methods: (Lecture, video....).

*** Reference: (Pages of the book, recorded lecture, video....)

Eighth: Assessment Methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Specific Course Output to be assessed									
				**If any CILO will not be assessed in the course, mark NA.									
				K1	K2	K3	S1	S2	S3	S4	S5	C1	C2
First Exam													
Second Exam													
Mid-term Exam			35	✓	✓	✓	✓	✓	✓	✓	✓		
Participation			5									✓	✓
Asynchronous Activities													
Quizzes			10			✓				✓	✓		
Assignments													
Group presentation													
Final Exam			50	✓	✓	✓	✓	✓	✓	✓	✓		
Total out of 100			100										

Ninth: Course Policies

- All course policies are applied to all teaching patterns (online, blended, and face-to-face Learning) as follows:
 - a. Punctuality.
 - b. Participation and interaction.
 - c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).