

Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Software Engineering Department	QF01/0408-4.0E
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Study plan No.	2022-2023		University Specialization		Artificial Intelligence
Course No.	0142230		Course name		Introduction to Data Science
Credit Hours	3		Prerequisite Co-requisite		Probabilities and Statistics
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 type="checkbox"/> Mandatory requirements <input checked="" type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning		<input type="checkbox"/> Blended learning		Traditional learning
Teaching model	<input type="checkbox"/> 2 Synchronous: 1asynchronous		<input type="checkbox"/> 2 face to face : 1synchronous		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	
Division number	Time	Place	Number of students	Teaching style	Approved model

Brief description

This course includes the following topics:
Introduction to data science, data preprocessing, data cleaning, data transformation, data visualization, and statistics in data science.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	1- INTRODUCTION TO DATA SCIENCE Essential Concepts, Peters Morgan, AI Science, 2017				
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1-An Introduction to Data Science, By Jeffrey S. Saltz, Jeffrey M. Stanton, SAGE, 2018 2-Introducing Data Science, big data, machine learning, and more, using python tools. Davy Cielen, Arno D. B. Meysman, and Mohamed Ali, Manning, 2016.				
Supporting websites	-				
The physical environment for teaching	Class room	<input type="checkbox"/> labs	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others	
Necessary equipment and software	R Studio				

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Supporting people with special needs	-
For technical support	-

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

No.	Course learning outcomes	The associated program learning output code
Knowledge		
K1	To show excellent knowledge in the basic data science topics	MK3
K2	To be acquainted with the basics of various advanced data science topics.	MK3
Skills		
S1	To be able to apply data science concepts to perform various tasks such as preprocessing, visualization, and transformation.	MS3
Competences		
C1	To apply the various concepts of data science in solving real-life problems	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, 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	Definitions and notions of data science. How data science is related to other disciplines. Computation thinking – a way to solve problems systematically.	Lecture	TB1:Ch1

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2	What skills data scientists needs Data presentation and storage.	Lecture	TB1:Ch1
3	Data Types. Data collection.	Lecture	TB1:Ch1
4	Data pre-processing.	Lecture	TB1:Ch2
5	Data pre-processing.	Lecture	TB1:Ch2
6	Knowing the various forms of data analysis and analytics techniques.	Lecture	TB1:Ch3
7	Introduction to correlation and regression.	Lecture	TB1:Ch4
8	Introduction to correlation and regression. Midterm	Lecture	TB1:Ch4
9	How to undertake simple summaries and presentations of numerical and categorical data	Lecture	TB1:Ch4
10	How to undertake simple summaries and presentations of numerical and categorical data	Lecture	TB1:Ch4
11	Knowing the basic statements in R	Lecture + problem solving	RF1:Ch3
12	Control structures in R.	Lecture + problem solving	RF1:Ch3
13	Vectors, Data frames	Lecture + problem solving	RF1: Ch5
14	Handling missing data, and summarizing data in R	Lecture + problem solving	RF1:Ch6
15	Handling missing data, and summarizing data in R	Lecture + problem solving	RF1:Ch6
16	Final Exam		

* 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.