Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Software Engineering Department	QF01/0408-4.0E

Study plan No.	**2021/2022**		**University Specialization**	Artificial Intelligence	
Course No.	0142230		**Course name**	Introduction into Data Science	
Credit Hours	**3**		**Prerequisite Co-requisite**		
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	☐ Mandatory requirements	☑ Elective requirements
Teaching style	☐ Full online learning		☐ Blended learning		Traditional learning	
Teaching model	☐ **2Synchronous: 1asynchronous**		☐ **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 extraction, data preprocessing, data cleaning, data transformation, data visualization, data analytics, statistics in data science, ETL tools, handling big data, streamline data ingestion.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	**1-** Data Science from Scratch: First Principles with Python. Joel Grus, 2019.O'REILLY, 2nd Edition.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1-Data Mining, Concepts and Techniques, Jiawei Han, 3rd edition, 2016. 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	Class room	☐ labs	☐ Virtual	☐ Others

teaching			educational platform	
Necessary equipment and software				
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
K3		
	Skills	
S1	To be able to apply data science concepts to perform various tasks such as data extraction, preprocessing, visualization, and transformation.	**MS3**
S2		
S3		
	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	Introduction to Data Science	Lecture	**T:1-13**
2	Data Extraction	Lecture	**T:111-128**
3	Data Preprocessing	Lecture	**R1: 84-95**
4	Data Preprocessing	Lecture	**R1: 95-110**
5	Data Transformation	Lecture	**R1: 111-117**
6	Mid Exam Estimated + Revision	learning through problem solving	
7	Case Study 1	learning through problem solving	**Handouts**
8	Data Visualization	Lecture	**T:43-52**
9	Data Analytics	Lecture	**R1: 125-149**
10	Statistics for Data Science	Lecture	**T:55-99**
11	ETL Tools	Lecture	**Handouts**
12	Handling Big data	Lecture	**Handouts**
13	Streamline Data Ingestion	Lecture	**Handouts**
14	**Case Study 2**	learning through problem solving	**Handouts**
15	**Presentations.**	participatory learning	
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.**