Course Description Form

1. Course Name:
Data Mining
2. Course Code:
COMP446
3. Semester / Year:
Fourth / Second
4. Description Preparation Date:
24/1/2026
5. Available Attendance Forms:
Attendance Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
60 Hours (2 Hours Theoretical + 2 Hours Practical)*15/ 3 Credit
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Zainab Namh Abdula Email: zainab.namhabdula@nahrainuuniv.edu.iq Lab Instructors: Assist. Prof. Dr. Zainab Namh, Assistant Professor Azhar Mawlood, Dr. Sawsan Kamal, and Assistant Lecturer Esraa Hussain
8. Course Objectives

Course Objectives	The course aims to introduce the students to the methods used in data mining and to describe its needs. The course also aims to process data, prepare the data, and understand the relationships between the inputs to make a specific decision. In addition to introducing the students to the concept of data science and its methodology followed by real examples

9. Teaching and Learning Strategies

Strategy	Theoretical books and lectures, in addition to laboratory work, discussion, and asking questions help the student to analyze and make conclusions. Active learning and practical projects by creating groups of students to solve practical problems during the lecture, in addition to providing workshops on modern topics in data mining.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Recognize and understand the term data mining and the data used	Introduction to Data Mining, Data for Data Mining	Lectures	Questions during the lecture
2	2	Understand data science methodology	Data Science Methodology	Lectures	Questions during the lecture
3	2	Data cleaning, transformation, and integration.	Data Understanding & Preprocessing	Lectures	Quiz
4	2	Recognizing the different types of data and understanding the difference between them, in addition to measuring the central tendency and measure of dispersion.	Getting to Know Your Data – Chapter 2 Data, Attribute Types, Central Tendency, Measure of Dispersion, Proximity and Distance Measurements	Lectures + Examples	Questions during the lecture
5	2	The student knows how to cluster the data sets using an unsupervised machine-learning algorithm	K-Means Clustering	Lectures + Examples	Questions during the lecture
6	2	Mid 1			
7	2	The student knows how to classify the data outputs using a supervised machine learning algorithm	Decision Trees ID3	Lectures + Examples+ Group Work	Questions during the lecture

8+9	4	PCA, feature selection, and extraction.	Dimensionality Reduction	Lectures + Examples+ Group Work	Quiz
10+11	4	The student's knowledge of the association rules by finding the frequent itemsets	Frequent Itemset Mining and Association Rules	Lectures + Examples + Group work	Questions during the lecture
12	2	Mid 2			
13	2	The student's knowledge of text analysis and how to extract useful information and then classify them	Text Analysis	Lectures + Examples	Quiz
14	2	Final Project Presentations			

11.Course Evaluation

Assessment Type	Marks
Quizzes	5
Seminar	5
Attendance	5
Mid Exam	10
Lab Mid Exam	7
Lab Attendance and Assessment	8
Lab Final Exam	10
Final Exam	50
Total	100

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Data Mining, Concepts and Techniques,** Jiawei Han, Micheline Kamber and Jian Pei, **Elsevier, 2023**
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Youtube –Andrew Ng

Lab Structure

Lab Instructors: Assist. Prof. Dr. Zainab Namh, Assistant Professor Azhar Mawlood, Dr. Sawsan Kamal, and Assistant Lecturer Esraa Hussain

Week	Subject Name
1	Machine Learning Algorithms Revision
2+3	Exploratory Data Analysis (EDA) in data mining
4	Central Tendency and Similarity Measure
5	K Means Clustering
6	Mid Lab
7	Supervised Learning: Decision Tree (Classification and Regression)
8	Dimension Reduction
9	Association Rules
10+11	Text Analysis and Feature Extraction
12	Model Evaluation and Cross-Validation
13	Practical Application: Sentiment Analysis
14	Project Presentation
15	Final Exam