Detailed Course Description - Course Plan Development and Updating Procedures/ Computer Information Systems Department	QF01/0408-3.0E

Faculty	Faculty of Science and Information Technology	Department	Computer Information Systems
Course Number	**0113354**	Course Title	**Data Mining**
Number of Credit Hours	3	Pre-Requisite/Co-Requisite	Advanced Databases

Brief Course Description
This course provides the following topics:
Introduction to Data Mining, Classification, Clustering, Association Rule Discovery, Anomaly Detection, Web Mining, Collaborative Filtering, and various data mining topics.

	Course Goals and Learning Outcomes
Goal 1	**Distinguishes between data mining tasks and non-data mining tasks**.
Learning Outcomes	**1.1** To be able to categorize each scenario to DM or Non DM task.
Goal 2	**Uses WEKA software to perform basic data mining tasks.**
Learning Outcomes	**2.1** To acquire the ability to use WEKA to solve data mining problems.
Goal 3	**Understand the concepts of Classification, Clustering, and Association Rules Discovery.**
Learning Outcomes	**3.1** To be able to show a good comprehension in Classification, Clustering, and association rule discovery.
Goal 4	**Be acquainted with various data mining topics.**
Learning Outcomes	**4.1** To acquire the ability to use data mining methods to solve real-life problems.
Textbook	**1-** Ian Goodfellow, Yoshua Bengio, and Aaron Courville, Deep Learning**, 2016**.
Supplementary References	**1-** Charu Aggarwal. Data Mining, the text book. Springer. **2015** **2-** Ian Witten, Eibe Frank, Mark Hall, and Christopher Pal. Data Mining: Practical Machine Learning Tools and Techniques. Morgan Kaufmann. **2016**.

Course Timeline				
Week	**Number of Hours**	**Course Topics**	**Pages (Textbook)**	**Notes**
01	**1 1 1**	**Data Mining** Definition. Data Mining Categories.	**1-16 (Ref1)**	
02	**1 1 1**	**Data Preprocessing.** Types of Data. Enhancing Data Quality. Similarity Measurements.	**22-44 (Ref1)**	
03	**1 1 1**	**Sampling and Feature Selection.** Types of Sampling. Feature Selection Methods. Mean TF.IDF. CHI Square.	**47-55 (Ref1)**	
04	**1 1 1**	**Classification** Introduction. Decision Support Trees, K-Nearest Neighborhood, Support Vector Machines, Artificial Neural Networks.	**145-276 (Ref1)**	
05	**1 1 1**	**Classification** Rule Based Classification. Using WEKA to apply classification.	**145-276 (Ref1)**	
06	**1 1 1**	**First Exam 20%**		
07	**1 1 1**	**Clustering** Introduction. KMeans Algorithm. Hierarchical Clustering. Using WEKA to apply clustering.	**487-526 (Ref1)**	
08	**1 1 1**	**Association Rules.** Apriori Algorithm. **Dimensionality Reduction Methods.** Introduction. Latent Semantic Indexing. Information Retreival.	**327-353 (Ref1)**	
09	**1 1 1**	**Various Data Mining Topics.** Collaborative Filtering. Web Mining. Data ware Housing.	**Ref2**	
10	**1 1 1**	**Various Data Mining Topics.** Graph Mining. Social Network Analysis. Data Stream Mining.	**Ref2**	
11	**1 1 1**	**Second Exam 20%**		
12	**1 1 1**	**Introduction to Deep Learning.**	**12-27 (TB)**	
13	**1 1 1**	**Advanced Deep Learning and Data Mining Topics.**	**(TB)**	

14	**1 1 1**	**Project Presentations.**		
15	**1 1 1**	**Project Presentations.**		
16	**1 1 1**	**Final Exam 50%**		

Theoretical Course Evaluation Methods and Weight	Participation = 10% First Exam 20% Second Exam 20% Final Exam 50%	**Practical (Clinical) Course Evaluation Methods**	Semester Students' Work = 50% (Reports, Research, Quizzes, Etc.) Final Exam = 50%

Approved by Head of Department		**Date of Approval**	

Extra information (to be updated every semester by corresponding faculty member)

Name of Teacher		Office Number	
Phone Number (Extension)		Email	_____@zuj.edu.jo
Office Hours			