MARMARA UNIVERSITY FACULTY OF ENGINEERING

2022-2023 Spring

CSE4063 Fundamentals of Data Mining

COURSE DESCRIPTION FORM

Offering Department	Computer Engineering		**Compulsory/Elective**	Elective
Course Code	CSE4063		**Level of Course**	Bachelor's Degree
Course Title	Fundamentals of Data Mining			
Language of Instruction	English		**Mode of Delivery**	Online
ECTS Credit	5		**Local Credits**	5
Weekly Contact Hours	Theoretical (T): 3	Applied (A): 0	Laboratory (L): 0	
Prerequisite(s)	None		**Prerequisite to**	None
Instructor	Assoc.Prof.Dr. Mustafa AĞAOĞLU		agaoglum@gmail.com	
Teaching Assistant	None		None	

Course Materials	**Mandatory**	Data Mining: Concepts and Techniques; 3rd Ed; J.Han, M.Kamber, J.Pei; Morgan Kaufmann; 2011.
		https://ues.marmara.edu.tr
	Recommended	Introduction to Data Mining; P.Tan, M.Steinbach, V.Kumar; Addison-Wesley; 2005.
	Notes	Lecture notes, announcements and projects will be shared via the course web page. It is the responsibility of the student to visit the web page regularly and download the course materials.
Course Objective	This course aims to provide basic knowledge about data mining tools and techniques.	
Course Content	Introduction to data mining. Data understanding and data preprocessing. Data warehousing and online analytical processing. Mining frequent patterns, associations and correlations. Classification: decision trees, bayes, support vector machines, neural networks. Clustering: partitioning, hierarchical, density-based.	
Learning Outcomes	**LO.1**	To describe the concepts of data mining, data warehousing, OLAP and OLTP.
	LO.2	To determine the types of data and perform data preprocessing.
	LO.3	To explain and apply classification concepts and techniques.
	LO.4	To explain and apply frequent pattern mining concepts and techniques.
	LO.5	To explain and apply clustering concepts and techniques.
	LO.6	To describe the social and ethical impacts of data mining.

Program Outcomes		**LO.1**	**LO.2**	**LO.3**	**LO.4**	**LO.5**	**LO.6**	**LO.7**
PO.1	Adequate knowledge in mathematics, science (a) and computer engineering subjects (b) pertaining to the relevant discipline (1); ability to use theoretical and applied information in these areas to model and solve engineering problems (2).	1b		1b	1b	1b	1b	
PO.4	Ability to devise (a), select, and use (b) modern techniques and tools needed for engineering practice (1); ability to employ information technologies effectively (2).			1b	1b	1b		
PO.5	Ability to design (a) and conduct experiments, gather data (b), analyze and interpret results for investigating engineering problems (c).		b	a,b,c	a,b,c	a,b,c		

Topics Taught, Impacts of Topics to Learning Outcomes, and Learning Assessment Methods	**No**	**Week**	**Topics**	**LO.1**	**LO.2**	**LO.3**	**LO.4**	**LO.5**	**LO.6**	**LO.7**
	T.1	1	Introduction to data mining	M, F					M, F	
	T.2	2	Getting to know your data		M, P					
	T.3	3	Data preprocessing		M, P					
	T.4	4	Data warehousing and online analytical processing	M, F						
	T.5	4	Mining frequent patterns, associations and correlations				M, P, F			
	T.6	5	Advanced pattern mining				M, P, F			
	T.7	6-7	Classification: decision trees			M, P, F				
	T.8	8-9	Classification: bayes, SVM, ANN			M, P, F				
	T.9	10-11	Cluster analysis: partitioning, hierchical					P, F		
	T.10	12	Cluster analysis: density-based					P, F		
	T.11	13-14	Project presentations							

Learning Assessment Methods, Grading Weights ve Application Rules

No	Type	Weight		
A	Attendance, Participation	0%	At least 70% attendance is mandatory to complete the course successfuly. Students who do not satisfy 70% attendance will get letter grade DZ.	Not applicable.
M	Midterm Exam	30%	One midterm exam will be done. All the books and the course materials will be kept closed during the exam.	Marmara University regulations will be followed for the makeup exams.
P	Project	30%	Two projects including presentations will be done.	Not applicable.
F	Final Exam	40%	One final exam will be done. All the books and the course materials will be kept closed during the exam.	Marmara University regulations will be followed for the makeup exams.
TOTAL		100%		

Letter Grade Evaluation

**	The letter grades will be determined based on the midterm exam, projects and final exam.
**	In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.
**	The final exam score and the total average score of the student must be at least 35 to pass the course.
**	According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 35 out of 100.

Evaluation	Midterm Exam	Project #1	Project #2	Final Exam		TOTAL
Points	30	15	15	40		100

Teaching Methods and Estimated Hours Spent

Hours Spent by Lecturer

No	Type	Notes	Hours
1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.	14x3=42
2	Problem Session	Problems related to the course topics are solved on the board.	
3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.	
4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)	
5	Field Study	Students attend activities outside the campus.	
6	Midterm Exam	Midterm exam is given during the midterm week.	1x10+2=12
7	Final Exam	Final exam is given during the final exam week.	1x20+2=22
Estimated Hours Spent by Student			
8	Project	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.	2x14=28
9	Homework	The students solve the problems given as homework.	
10	Pre-Class Self Study	The students study and learn the new subjects from course materials.	
11	Class Review	Students review the course subjects from course materials to prepare for the exams and homeworks.	14x1.5=21
12	Office Hours	Students ask questions to the instructor or the assistant during office hours.	2
TOTAL			125

Academic Honesty and Ethics

Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.
In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.

Extra Notes

**	Contact Rules: 1. Contact over email; 2. If not responded to your email in 24 hours, you may wait or message over whatsapp; 3. If not responded to your whatsapp message, you may call me.
**	Course Group: You should be a member of course whatsApp group. In order to be a member, you should email me including the information 1. Course code and name, 2. Student ID, 3. First & last name, 4. GSM phone number.