



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Data Mining							
Course Code		MTK571		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Today, a lot of information can be collected via computer based technologies. Interpreting, evaluating the collected information is very important subject for decision systems. Data mining is useful field for many areas. The fundamentals of data mining will be mentioned in this course. Data mining methods are going to be explained in detail and some applications are going to be developed with these methods.							
Course Content		Data Warehouse. Introduction to Data Mining. Classification with Decision Trees. Classification and Regression Trees (CART). Memory Based Classification: K- Nearest Neighbor Algorithm. Clustering. Association Rules. Statistical Classification Models: Bayes Classification and Bayes Networks. Optimization Based Classification Models: Support Vector Machine.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

### Recommended or Required Reading

1	Dr. Yalçın Özkan, Veri Madenciliği Yöntemleri (Methods of Data Mining), Papatya Yayıncılık, 2008.
2	J.Han and M.Kamber, Data Mining Concept and Techniques, Morgan Kaufmann Publisher, 2006.
3	D.Pyle , Data Preparation for Data Mining, Dartmouth Publishing, Inc., 1999.

Week	Weekly Detailed Course Contents	
1	Theoretical	Data Warehouse
	Preparation Work	Read the pages 11-18 from the Course Book 1.
2	Theoretical	Data Warehouse
	Preparation Work	Read the pages 18-35 from the Course Book 1.
3	Theoretical	Introduction to Data Mining
	Preparation Work	Read the pages 37-50 from the Course Book 1.
4	Theoretical	Classification with Decision Trees
	Preparation Work	Read the pages 51-75 from the Course Book 1.
5	Theoretical	Classification with Decision Trees
	Preparation Work	Read the pages 75-87 from the Course Book 1.
6	Theoretical	Classification and Regression Trees (CART)
	Preparation Work	Read the pages 89-115 from the Course Book 1.
7	Theoretical	Memory Based Classification: K- Nearest Neighbor Algorithm
	Preparation Work	Read the pages 117-130 from the Course Book 1.
8	Theoretical	Clustering
	Preparation Work	Read the pages 131-149 from the Course Book 1.
9	Preparation Work	Read all subjects again.
	Intermediate Exam	MIDTERM EXAM
10	Theoretical	Clustering
	Preparation Work	Read the pages 149-156 from the Course Book 1.
11	Theoretical	Association Rules
	Preparation Work	Read the pages 157-166 from the Course Book 1.
12	Theoretical	Statistical Classification Models: Bayes Classification and Bayes Networks
	Preparation Work	Read the pages 167-183 from the Course Book 1.



13	Theoretical	Statistical Classification Models: Bayes Classification and Bayes Networks
	Preparation Work	Read the pages 167-183 from the Course Book 1.
14	Theoretical	Optimization Based Classification Models: Support Vector Machine
	Preparation Work	Read the pages 185-195 from the Course Book 1.
15	Theoretical	Optimization Based Classification Models: Support Vector Machine
	Preparation Work	Read the pages 195-207 from the Course Book 1.
16	Preparation Work	Read all subjects again.
	Final Exam	FINAL EXAM

**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	20	2	22
Midterm Examination	1	40	2	42
Final Examination	1	50	2	52
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = <b>ECTS</b>				8

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	To be able to recognize the concepts of data warehouse and data mining.
2	To be able to acquire and use data mining methods.
3	To be able to develop the applications using data mining methods.
4	To be able to gain the skill of interpreting some interrelations among these concepts
5	To be able to use concepts in solving certain types of problems

**Programme Outcomes (Mathematics Master)**

1	To be able to have an adequate theoretical and practical domain knowledge.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use theoretical and practical domain knowledge gained in the field of Mathematics.
4	To be able to interpret knowledge from different disciplines integrating knowledge in the field of mathematics and produce new information.
5	To be able to define, analyse, model and to solve the problems by scientific methods in Mathematics.
6	To be able to conduct a math related specialistic study independently.
7	To be able to develop new strategic approaches to solve problems occurred in unforeseen and complex math-related applications by taking responsibility.
8	To be able to lead in situations that require solving problems related to the mathematics.
9	To be able to criticize his/her knowledge and skills acquired in the field mathematics.
10	To be able to transfer his/her ideas and suggestions for solutions to problems by supporting quantitative or qualitative data verbally and in writing.
11	To be able to communicate both orally and written in a foreign language.
12	To be able to use computer hardware and information technologies with software required by Mathematics.
13	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and being able to support the development of social, scientific, cultural and ethical values.
14	To be able to develop mathematics-related strategies, policies and operational plans, and to evaluate the results obtained within the framework of quality processes.
15	To be able to use his/her knowledge in the field of mathematics and practical problem-solving skills in interdisciplinary studies.

**Contribution of Learning Outcomes to Programme Outcomes** 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	4	4	4	4	4
P2	5	5	5	5	5
P3	3	5	5	5	5
P4	5	5	5	5	5
P9	3	3	4	4	4
P12	4	4	4	4	4



P15	4	5	5	4	4
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