ÇANKAYA UNIVERSITY
Faculty of Economics and Administrative Sciences
Course Definition Form

Part I. Basic Course Information

Department Name	MANAGEMENT					Dept. Numeric Code		
Course Code	M A N 4 4 5	Number of Weekly Lecture Hours	3	Number of Weekly Lab/Tutorial Hours	-	Number of Credit Hours		3
Course Web Site	http:// man445.cankaya.edu.tr					ECTS Credit	0	5

Course Name and Other Course Information	
This information will appear in the printed catalogs and on the web online catalog.	
English Name	Data Analytics for Business
Turkish Name	İşletmeler için Veri Analitiği
Mode of Delivery	Face to face
Language of Instruction	English

Course Description
Provide a brief overview of what is covered during the semester. This information will appear in the printed catalogs and on the web online catalog.
Maximum 60 words.

This course deals with data- analytics in business. Topics covered in this course are: introduction to data-analytics; data-analytic thinking; business problems and data science solutions; introduction to R; supervised versus unsupervised data mining; entropy and information gain; feature selection; classification tree induction; logistic regression; support-vector machines; over fitting and its avoidance; cross-validation; nearest neighbor methods; hierarchical clustering; k-means clustering; the confusion matrix; visualizing model performance; evidence and probabilities; representing and mining text; N-gram sequences; principal component analysis; causal reasoning from data.

Prerequisites (if any) *Give course codes and check all that are applicable.*	1st	2nd	3rd	4th
	☐ Consent of the Instructor	☐ Senior Standing	☐ Give others, if any.	
Co-requisites (if any)	1st	2nd	3rd	4th

Course Type *Check all that are applicable*	☒ Must course for dept. ☐ Must course for other dept.(s) ☐ Elective course for dept. X ☐ Elective course for other dept.(s)

Part II. Detailed Course Information

Course Objectives
Maximum 100 words.

Provide the students with fundamental insights across a spectrum of data analytics concepts.

Emphasize a variety of tools and techniques useful in achieving successful data management.

Have the students understand the problems faced by a business and how these problems can be handled by means of data analytics approach.

Expose the students to the use of the computer packages in solving various data analytics problems.

Learning Outcomes
Explain the learning outcomes of the course. Maximum 10 items.

After the completion of this course, it is expected that the student will:

1. Gain fundamental insights across a spectrum of data mining techniques,
2. Be able to utilize a variety of tools and techniques useful in achieving data mining,
3. Be able to interpret the results of data analytics problems in organizations,
4. Understand the decision problems faced by a manager in a business,
5. Gain managerial insights from the models of data mining discussed,
6. Be able to use computer packages in solving various data mining problems.

Textbook(s)
List the textbook(s), if any, and other related main course material.

Author(s)	Title	Publisher	Publication Year	ISBN
F. Provost and T. Fawcett	Data Science for Business	O'Reilly Media	2013	1449361323

Reference Books
List, if any, other reference books to be used as supplementary material.

Author(s)	Title	Publisher	Publication Year	ISBN
I. H. Witten	Data Mining: Practical Machine Learning Tools and Techniques	Morgan Kaufmann	2016	0128042915

Teaching Policy
Explain how you will organize the course (lectures, laboratories, tutorials, studio work, seminars, etc.)

A variety of teaching approaches are used including lectures, in-class exercises, homework, case analysis, class discussion of important issues, and case presentations. A cooperative, student-centered learning is utilized to reach a high level of student involvement.

Laboratory/Studio Work
Give the number of laboratory/studio hours required per week, if any, to do supervised laboratory/studio work and list the names of the laboratories/studios in which these sessions will be conducted.

N/A

Computer Usage
Briefly describe the computer usage and the hardware/software requirements for the course.

Various data mining softwares including R and Excel.

Course Outline
List the weekly topics to be covered.

Week	Topic(s)
1	Introduction to Data Analytics
2	Data Mining Tasks
3	R package & R-Studio – I
4	R package & R-Studio – II
5	Entropy and Information Gain
6	Classification Trees
7	Midterm exam
8	Support Vector Machines
9	Logistic Regression
10	Nearest-Neighbor Reasoning
11	Hierarchical & K-means Clustering
12	Group projects
13	Group projects
14	Group projects

Grading Policy
List the assessment tools and their percentages that may give an idea about their relative importance to the end-of-semester grade.

Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage
Midterm-Exam	1	20%						
Attendance	13	13%						
Homework	1	7%						
Case Present.	1	20%						
Final Exam	1	40%						

ECTS Workload
List all the activities considered under the ECTS.

Activity	Quantity	Duration (hours)	Total Workload (hours)
Attending Lectures (*weekly basis*)	13	3	39
Attending Labs/Recitations (*weekly basis*)	-	-	-
Compilation and finalization of course/lecture notes (*weekly basis*)	13	1	13
Collection and selection of relevant material (*once*)	1	3	3
Self study of relevant material (*weekly basis*)	13	3	39
Take-home assignments	1	3	3
Preparation for quizzes	-	-	-
Preparation for mid-term exams (*including the duration of the exams*)	1	10	10
Preparation of term paper/case-study report (*including oral presentation*)	1	8	8
Preparation of term project/field study report (*including oral presentation*)	-	-	-
Preparation for final exam (*including the duration of the exam*)	1	10	10

TOTAL WORKLOAD **/** 25	125/25=5.28
ECTS Credit	**5**

Program Qualifications vs. Learning Outcomes *Consider the program qualifications given below as determined in terms of learning outcomes and acquisition of capabilities for all the courses in the curriculum. Look at the learning outcomes of this course given above. Relate these two using the Likert Scale by marking with X in one of the five choices at the right.*

No	Program Qualifications	Contribution				
		0	1	2	3	4
1	Acquire detailed knowledge concerning the economic and legal environment in which the business entities operate.	X				
2	Have profound theoretical background knowledge in basic business functions comprising organization and management, accounting, finance, marketing, and production and operations management.				X	
3	Obtain basic and intermediate level knowledge in quantitative techniques and methods that are predominantly used in business and management.					X
4	Have more specific knowledge in one of the business functions (including the mastery of quantitative approaches) that he/she has chosen to specialize.					X
5	Be able to apply the professional knowledge necessary to establish and/or run a business, or a department within a business entity.				X	
6	Be able to collect, edit, analyze, and interpret the representative data by applying both qualitative and quantitative methods in order to identify and clearly define the business problems and to develop insight and solutions.					X
7	Be able to adequately communicate upon analyses, findings, inferences, and recommendations with his/her superiors, team members, colleagues, and subordinates both in written and oral form.				X	
8	Be thereby qualified to conduct research in business administration and management.					X
9	Be appropriately trained to fulfill his/her responsibilities in team work both as a leader and an expert.		X			
10	Acquire the necessary skills to communicate effectively with the stakeholders of an organization so that he/she can become capable of analyzing the needs of the stakeholders and based on these analyses developing the objectives of the organization.				X	
11	Gain self-evaluation skills to identify exactly his/her self-learning and self-improvement needs, being at the same time equipped with the capacity to follow advanced courses and degree studies.			X		
12	Gain the ability to evaluate the organization that he/she is affiliated with and the ability to assess the knowledge that he/she has acquired in a critical perspective.				X	
13	Be able to use English, which is the medium of instruction in the department, at least in European Language Portfolio B1 General Level.					X
14	Be able to use information technologies applicable to business administration and management at European Computer Usage License Basic Level.					X
15	Be directed towards the behavioral patterns and responsibilities of a business administrator in terms of quality awareness, occupational safety and health, in-service training, environmental issues, social responsibilities, and social, organizational and business ethics.	X				
16	Be inclined to encourage innovation and continuous improvement within the organization in which he/she takes responsibilities.				X	

Scale for contribution to a qualification: **0**-none, **1**-little, **2**-moderate, **3**-considerable, **4**-highest