Course Description	
Course Code	YZ 306
Course Name	DATA SCIENCE
Prerequisite Courses	
Language of the Course	The English
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	
Course Content	This course will emphasize practical techniques for working with large-scale date. Specific topics covered will include statistical modeling and machine learning, data pipelines, programming languages and real world topics and case studies. The use of R programming language will be used.

Weekly Course Content	
Week 1	Introduction to R Programming Language, Matrix, Factor, List and Data Frames
Week 2	Data Entry, Function, Loop, Condition Structures in R
Week 3	Probability calculation and Probability Distributions and Data Visualization in R
Week 4	Descriptive Statistics, Regression and Correlation and R Applications
Week 5	Time Series in R
Week 6	Cluster Analysis, Discriminant Analysis and R Applications
Week 7	Overview of Mid-Term
Week 8	Midterm exam
Week 9	Parametric and Non-Parameter Statistical Tests and Applications in R - 1
Week 10	Parametric and Non-Parameter Statistical Tests and Applications in R - 2
Week 11	Parametric and Non-Parameter Statistical Tests and Applications in R - 3
Week12	Parametric and Non-Parameter Statistical Tests and Applications in R - 4
Week 13	Presentations
Week 14	Presentations
Week 15	Final exam

Course Learning Outcomes	
1	They will see the general use of R programming language, functions, conditions, loop structures in R, probability calculation in R, and probability distributions.
2	They will see the use of some functional libraries and packages in R, data visualization and statistical inference.
3	They will learn theoretically and practically some methods commonly used in Data Science.
4	They will learn Parametric and Non-Parametric Staitstical Tests and R applications.

Contribution of the Course to Program Qualifications		Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.	5
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.	5
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.	5
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.	3
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.	5
06	The student will have the ability to work between disciplines and teamwork.	4
07	The student will have the ability to work in international environments and adapt to different cultures.	5
08	The student will have verbal and written communication skills in Turkish and English.	5
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.	1
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.	1
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).	2
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.	2
13	The student will have the ability to find unusual ways and produce projects.	5
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.	2
15	It is sensitive about the problems of the age and looks after the national interests.	5

ECTS WORKLOAD			
	Number	**Duration (hours)**	**Number*Duration**
Face to face education	14	3	42
Out-of-class study time (pre-study, reinforcement)	14	2	28
Homeworks	4	6	24
Presentation / Seminar preparation	1	5	5
Quizzes	0	0	0
Preparation for midterm exams	1	15	15
midterm exams	1	2	2
Project (Semester assignment)	0	0	0
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	1	20	20
Semester final exam	1	2	2
Research	4	4	16
TOTAL WORKLOAD			**154**
ECTS			**5**

Evaluation		
SEMESTER EVALUATION	**Number**	**Contribution Percentage**
Midterm	1	20
Quiz	0	0
Homework	4	20
SEMESTER TOTAL		**40**
Contribution rate of mid-term evaluations to success		40
Contribution rate of the final exam to success		60
GRAND TOTAL		**100**

RESOURCES

Textbook	
Helpful Resources	"Univariate, Bivariate, and Multivariate Statistics Using R", Daniel J. Denis, Wiley, 2020. "İstatistikte R ile Programlama", Necmi Gürsakal, Dora, 2018. "Introduction to Data Science", Laura Igual, Santi Segui, Springer, 2017. “Uygulamalı Çok Değişkenli İstatistik Teknikleri”, Ali Sait Albayrak, 2006.