STATISTICAL MODELLING

1	Course Title:	STATISTICAL MODELLING
2	Course Code:	EKO5124
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. SEVDA GÜRSAKAL
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	E-posta : sdalgic@uludag.edu.tr Telefon: 0 224 29 41112 Adres: Bursa Uludağ Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, Ekonometri Bölümü,16059, Görükle/Bursa.
17	Website:	
18	Objective of the Course:	This course covers generalized linear models, some basic statistical learning tools, and statistical models for complex causal relationships, especially in social science contexts. In addition to the theoretical foundations of the models, they will also be discussed in practice. These applications are implemented using the statistical software environment R. The course uses a hands-on approach through analysis using statistical software R. Practices are mostly selected from real social science research questions, but examples from other disciplines such as biology, medicine, and engineering are also given.
19	Contribution of the Course to Professional Development:	It has a contribution to lay the groundwork for students to develop their professional skills related to statistical modeling and application.
20	Learning Outcomes:	
	1	Be able to describe the basic concepts and assumptions of statistical models
	2	Be able to describe statistical distributions
	3	Be able to describe linear models through the framework of generalized linear models
	4	Be able to recognize and predicting nonlinear models
	5	Be able to analyze multidimensional data through dimension reduction, clustering and discriminant analysis
	6	Be able to use the statistical model suitable for the data structure in different disciplines;
	7	Be able to interpret the results by analyzing the predicted statistical model
	8	Be able to use the R software for data management, data analysis and data visualization.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction to statistics; Population and Sample; Random Sampling; Some important statistics; Data description and visualization techniques.	
2	Introduction of linear and nonlinear models	
3	R essentials (import, export, manipulate, data); R data visualization functions;	
4	Generalized Linear Models	
5	Implementing Generalized Linear Models with R	
6	Hierarchical Models	
7	Principal Component Analysis and Implementations With R	
8	Nonlinear Principal Component Analysis and Implementations With R	
9	Factor Analysis and Implementations With R	
10	Clustering Analysis	
11	R implementations for Clustering Analysis	
12	Discriminant Analysis	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	3.00	42.00
Homeworks	4	5.00	20.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	10.00	10.00
Others	0	0.00	0.00
Final Exams	1	20.00	20.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

2. A. Davison, Statistical Models, Cambridge University Press, 2003.
3. Institute of Education, Multilevel Models Project, 1999.
4. William H. Greene, Statistical Models for the Social and

23	Assesment	
	R	
Midterm Exam	0	0.00
Quiz	0	0.00
Home work project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade		0.00
Contribution of Final Exam to Success Grade		100.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Measurement and evaluation are made with multiple choice test questions and written questions.
24	**ECTS / WORK LOAD TABLE**	

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	3	3	4	3	4	4	4	4	4	3	4	3	0	0	0	0
ÖK2	4	3	4	4	4	4	5	4	4	4	4	4	0	0	0	0
ÖK3	4	3	4	4	4	4	4	4	4	4	4	4	0	0	0	0
ÖK4	4	3	3	3	3	4	4	4	3	4	4	3	0	0	0	0
ÖK5	4	3	3	4	4	4	4	4	4	4	4	5	0	0	0	0
ÖK6	4	4	4	4	4	4	4	4	5	5	5	5	0	0	0	0
ÖK7	4	4	4	4	5	5	5	5	5	5	5	5	0	0	0	0
ÖK8	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**			**4 High**			**5 Very High**				