OSTIM TECHNICAL UNIVERSITY
FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES
BUSINESS ADMINISTRATION DEPARTMENT
COURSE SYLLABUS FORM

MIS 216 Statistics II							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Statistics II	MIS 216	4	2	1	0	3	5

Language of Instruction	English
Course Status	Compulsory
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Question-Answer, Problem Solving

Course Objective
This course first reviews basic concepts of statistics such as introduction to statistical methodology, descriptive and inferential statistics, variables and their measurement, describing data with tables and graphs, introduction to probability distributions, estimation, significance tests, simple linear regression and correlation. Then the course covers the multivariate relationships, multiple regression model, two-way ANOVA and regression modeling, using multiple regression in research, nonlinear relationships, goodness-of-fit tests for contingency tables, factor analysis and structural equation models. Beside the theoretical knowledge and conceptual explanations, the content of this course gives considerable emphasis on practical aspects using computer program.

Learning Outcomes
The students who become successful in this course will be able; • to master the basic and advanced concepts of statistics • to describe the theoretical details of the statistical methods • to learn about the data analysis with computer program • to learn the use of statistics with real life data

Course Outline
Introduction to Multivariate Relationships, Multiple Regression and Correlation, Regression with Categorical Predictors: Analysis of Variance Methods, Multiple Regression with Quantitative and Categorical Predictors, Model Building with Multiple Regression, Logistic Regression: Modeling Categorical Responses, An Introduction to Advance Methodology. Applications using statistical computer programs SPSS, R and Stata.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Review of Chapters 1-5 Review of Chapters 6-9	– Sampling and Measurement – Descriptive Statistics – Probability Distributions – Estimation – Significance Tests – Comparison of Two Groups – Analyzing Association Between Categorical Variables – Linear Regression and Correlation
2-3	Introduction to Multivariate Relationships (Agresti, Chap.10)	– Association and Causality – Controlling for Other Variables – Types of Multivariate Relationships – Inferential Issues in Statistical Control
4-5	Multiple Regression and Correlation (Agresti, Chap.11)	– The Multiple Regression Model – Multiple Correlation and R2 – Inferences for Multiple Regression Coefficients – Modeling Interaction Effects – Comparing Regression Models – Partial Correlation – Standardized Regression Coefficients
6-7	Regression with Categorical Predictors: Analysis of Variance Methods (Agresti, Chap.12) Review	– Regression Modeling with Dummy Variables for Categories – Multiple Comparisons of Means – Comparing Several Means: Analysis of Variance – Two way ANOVA and Regression Modeling – Repeated-Measures Analysis of Variance – Two-Way ANOVA with Repeated Measures on a Factor

		– Problem solving session I
8	**MIDTERM EXAM**	
9-10	Multiple Regression with Quantitative and Categorical Predictors (Agresti, Chap.13)	– Models with Quantitative and Categorical Explanatory Variables – Inference for Regression with Quantitative and Categorical Predictors – Case Studies: Using Multiple Regression in Research – Adjusted Means – The Linear Mixed Model
11-12	Model Building with Multiple Regression (Agresti, Chap.14)	– Model Selection Procedures – Regression Diagnostics – Effects of Multicollinearity – Generalized Linear Models – Nonlinear Relationships: Polynomial Regression – Exponential Regression and Log Transforms' – Robust Variances and Nonparametric Regression
13	Logistic Regression: Modeling Categorical Responses (Agresti, Chap.15)	– Logistic Regression – Multiple Logistic Regression – Inference for Logistic Regression Models – Logistic Regression Models for Ordinal Variables – Logistic Models for Nominal Responses – Loglinear Models for Categorical Variables – Model Goodness-of-Fit Tests for Contingency Tables
14	An Introduction to Advance Methodology (Agresti, Chap.16)	– Missing Data: Adjustment Using Multiple Imputation – Multilevel (Hierarchical) Models – Event History Models – Path Analysis – Factor Analysis – Structural Equation Models – Markov Chains – The Bayesian Approach to Statistical Inference
15	Review	– Problem solving session II
16	**FINAL EXAM**	

Textbook(s)/References/Materials:
Textbook: Agresti, A. (2018). Statistical methods for the social sciences. Pearson. Devore J.L. (2015). Probability and Statistics for Engineering and the Sciences, 8th Edition, Brooks/Cole Publishing Co. Okello, G. O. (2023). Simplified Business Statistics Using SPSS, Routledge Taylor & Francis Group.
Supplementary References: Newbold, Carlson, and Thorne Statistics for Business and Economics (2013), 8th Edition, Pearson Education, Inc.
Other Materials:

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance	14	10
Lab		
Class participation and performance		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework	5	10
Presentation		
Projects		
Report		
Seminar		
Midterm Exam/Midterm Jury	**1**	**30**
General Exam / Final Jury	**1**	**50**
Total		**100**
Success Grade Contribution of Semester Studies		**50**
Success Grade Contribution of End of Term		**50**
Total		**100**

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Course hours (Including the exam week): 16 x total course hours)	16	2	32
Laboratory			
Application	16	1	16
Course-Specific Internship (if any)			
Field Study			
Study Time Out of Class	16	2	32
Presentation / Seminar Preparation			
Projects			
Reports			
Homework	5	4	20
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	25	25
Preparation Period for the Final Exam / General Jury	1	30	30
Total Workload	**(155/30 = 5,17)**		**155**

Course' Contribution Level to Learning Outcomes						
Nu	Learning Outcomes	Contribution Level				
		1	2	3	4	5
LO1	To master the basic and advanced concepts of statistics					X
LO2	To describe the theoretical details of the statistical methods					X
LO3	To learn about the data analysis with computer program					X
LO4	To learn the use of statistics with real life data					X

	Relationship Between Course Learning Outcomes and Program Competencies (Department of Management Information Systems)					
Nu	Program Competencies	Learning Outcomes				Total Effect (1-5)
		LO1	LO2	LO3	LO4	
1	Recognize and distinguish the basic concepts such as data, information, and knowledge in the field of Management Information Systems and know the processes to be followed for data acquisition, storage, updating, and security.			x		4
2	Develop and manage databases suitable for collecting, storing, and updating data.			x		4
3	As a result of his/her ability to think algorithmically, and easily find solutions to problems concerning basic business functions.				x	5
4	Learn programming logic, and have information about current programming languages.			x		4
5	Be able to use up-to-date programming languages.			x		4
6	Be able to take part in teamwork or lead a team using knowledge of project management processes.				x	4
7	Know ethical and legal rules, and use professional field knowledge within the scope of ethical and legal rules.		x			4
8	Know the fundamental areas of business administration namely management and organization, production, finance, marketing, numerical methods, accounting, etc., and have the knowledge and skills to work in-depth in at least one of them.	x				5
9	Be able to solve the problems encountered in the field of internet programming by designing web applications.				x	1
10	Develop and manage logistics and supply chain management activities				x	1
11	Adapt his/her theoretical knowledge and the experience he/she will gain through practice at	x				5

	the departments of businesses such as information technologies, R&D, and management to real life.					
12	Be able to develop strategies that will provide a competitive advantage with his/her advanced knowledge of management strategies and management functions.		x			**4**
13	Develop a business idea, commercialize the business idea, and design and manage his/her venture using entrepreneurial knowledge.	x				**5**
14	By using English effectively, they can follow, read, write, speak and communicate universal information in the field of management information systems in a foreign language with professional competence.		x			**5**
Total Effect						**55**

Policies and Procedures

Web page: https://www.ostimteknik.edu.tr/management-information-systems-english-1241/915

Exams: The exams aim at assessing various dimensions of learning: knowledge of concepts and theories and the ability to apply this knowledge to real world phenomenon, through analyzing the situation, distinguishing problems and by suggesting solutions. The written exams can be of two types, ie. open-ended questions, which can also be in the form of problems or multiple-choice questions. Exams are composed of a final exam comprising 50% of the student's grade and a mid-term exam, with less weight. The rest of the grade comes from other assessment methods, shown in the assessment table included in this syllabus. The Department of Management Information Systems does not tolerate any act of academic dishonesty. Examinations are individual and must be completed without any outside assistance. Students who attempt to cheat during exams will receive a failing grade from that exam. The case could also be carried to the Dean's Office for additional disciplinary action.

Assignments: The assignments could be in the form of Homework or paper writing. A paper must include 1- Abstract 2- Introduction, 3- Literature review 4- Research Method, 5- Findings and Discussion 6- Conclusion. Scientific Research Ethic Rules are very important while preparing assignments. The students should be careful about citing any material used from outside sources and reference them appropriately. The students must not adopt "cut-copy-paste" behavior from the sources in the internet or use the contents of any type of previous work in their assignments. Plagiarism is unethical behavior and is subject to disciplinary action.

Missed exams: Any student missing an exam needs to bring an official medical report to be able to take a make-up exam.

Projects: The projects (if are a part of the course requirements) could be performed either individually or in groups, without engaging in plagiarism.

Attendance: Attendance requirements are announced at the beginning of the term. Students are usually expected to attend at least 70% of the classes during each term.

Objections: If the student observes a material error in his/her grade, he/she has the right to place an objection to the Faculty or the Department. The claim is examined and the student is notified about its outcome.