School of Engineering and Natural Sciences / Computer Engineering (English)

2023 - 2024 Academic Year

APPLIED STATISTICS

Syllabus

Course Description						
Name		**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
APPLIED STATISTICS		COE3249070	Spring Semester	3+0	3	6
Prerequisites Courses	OLASILIK VE RASSAL DEĞİŞKENLER					
Recommended Elective Courses						
Language of Instruction	English					
Course Level	First Cycle (Bachelor's Degree)					
Course Type	Elective					
Course Coordinator	Assoc.Prof. Melis Almula KARADAYI					
Name of Lecturer(s)	Prof.Dr. Afgan ASLAN					
Assistant(s)	Res. Asst. Ahmed ŞENGİL (aasengil@medipol.edu.tr)					
Aim	This course aims to provide basic statistical techniques in order to collect, analyze and interpret data with emphasis on engineering applications.					
Course Content	This course contains; Introduction to Statistics and Data Analysis,Sampling Distributions,Sampling Distributions and Estimation,Confidence Intervals-Single Population I,Hypothesis Testing- Single Population I,Confidence Intervals- Two Populations I,Confidence Intervals- Two Populations II,Hypothesis Testing- Two Populations I,Hypothesis Testing- Two Populations II,Introduction to Correlation and Regression Analysis,Linear Regression Models,Linear Regression Models,Multiple Regression Models,Advanced Topics in Multiple Regression Models.					

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
Construct and interpret graphical and/or numerical summaries of data.	16, 9	A
Distinguish between a population and a sample.	14, 16, 9	A, G
Construct confidence intervals for population characteristics	12, 14, 16, 9	A, E, G
Construct hypothesis tests for population characteristics.	12, 16, 9	A, E, G
Carry out correlation and regression analysis	12, 16, 9	A, E, G
Use statistical package SPSS to carry out the statistical procedures discussed during the semester.	11, 9	A, E

Teaching Methods	11: Demonstration Method, 12: Problem Solving Method, 14: Self Study Method, 16: Question - Answer Technique, 9: Lecture Method
Assessment Methods	A: Traditional Written Exam, E: Homework, G: Quiz

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Introduction to Statistics and Data Analysis	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 1
2	Sampling Distributions	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 8
3	Sampling Distributions and Estimation	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 8
4	Confidence Intervals-Single Population I	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 9
5	Hypothesis Testing- Single Population I	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 10
6	Confidence Intervals- Two Populations I	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 9
7	Confidence Intervals- Two Populations II	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 9
8	Hypothesis Testing- Two Populations I	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 10
9	Hypothesis Testing- Two Populations II	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 10
10	Introduction to Correlation and Regression Analysis	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 11
11	Linear Regression Models	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 11
12	Linear Regression Models	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 11
13	Multiple Regression Models	Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson, CHAPTER 12
14	Advanced Topics in Multiple Regression Models	Lecture Notes

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

Resources

Walpole, Myers, Myers, and Ye. "Probability and Statistics for Engineers and Scientists", Pearson.

Douglas C. Montgomery & George C. Runger. "Applied Statistics and Probability for Engineers", Wiley