

School of Pharmacy / School of Pharmacy (English)

2024 - 2025 Academic Year

RESEARCH METHODOLOGY and BIOSTATISTICS

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
RESEARCH METHODOLOGY and BIOSTATISTICS	PHA2213097	Spring Semester	2+0	2	3
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Required				
Course Coordinator	Prof.Dr. Mehmet KOÇAK				
Name of Lecturer(s)	Prof.Dr. Mehmet KOÇAK				
Assistant(s)					
Aim	To give basic information of biostatistical methodology to solve problems related to pharmaceutical research and analysis and to increase the statistical literacy.				
Course Content	This course contains; Basic Statistical terminology, Descriptive Statistics, frequency tables, Concept and Measures of central tendency, Concept and Measures of variation, Normal Distribution and applications, Data analysis with SPSS (assumptions of normality, descriptive statistics), Central Limit theorem and Confidence Interval, Concept of Hypothesis testing, Concept of correlation, Concept of Regression Modelling, The importance and steps of the scientific research process - Research in Health Sciences, Research methods: observational research design, Research Techniques - Experimental Researches, General Review of the course.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1. Will be able to describe the fundamental steps of statistical methodology that are relevant to implement the scientific research			10, 12, 16, 6, 9	A	
1.1. Recognizes the data collection methods in a comparative manner			16, 9	A	
1.2. Arranges data			16, 9	A	
1.3. Summarizes data using graphs and diagrams			16, 9	A	
2. Applies the techniques of statistical analysis to pharmaceutical problems in particular			10, 12, 16, 6, 9	A	
2.1. Applies descriptive statistical techniques			16, 6, 9	A	
2.2. Uses inferential statistical techniques for statistical generalization			10, 12, 16, 6, 9	A	
2.3. Recognizes the fundamentals of statistical decision theory			10, 12, 6, 9	A	
2.4. Comprehends and applies the fundamentals of two-dimensional (bivariate) analysis			10, 12, 16, 6, 9	A	
2.5. Investigates the association between two continuous variables			10, 12, 16, 6, 9	A	
2.6. Comprehends and applies the concepts of correlation and regression			10, 12, 16, 6, 9	A	
2.7. Recognizes the essential nonparametric methods			10, 12, 16, 6, 9	A	
3.1. Solves problems in health and particularly in pharmaceutical sciences by using analytical techniques			10, 12, 16, 6, 9	A	
3.2. Interprets and reports the results obtained			10, 12, 16, 6, 9	A	
3.3. Uses a statistical software packages selected for the course for basic statistics			10, 12, 16, 6, 9	A	
Teaching Methods	10: Discussion Method, 12: Problem Solving Method, 16: Question - Answer Technique, 6: Experiential Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Basic Statistical terminology	Sümbüloğlu, 1-6			
2	Descriptive Statistics, frequency tables	Sümbüloğlu, 7-23			
3	Concept and Measures of central tendency	Sumbuloglu, 11-23			
4	Concept and Measures of variation	Sumbuloglu, 23-27			
5	Normal Distribution and applications	Sümbüloğlu s.44-47			
6	Data analysis with SPSS (assumptions of normality, descriptive statistics)	Hayran ve Ozbek, 57-82			
9	Central Limit theorem and Confidence Interval	Rosner			
9	Concept of Hypothesis testing	Sümbüloğlu s. 48-57			
10	Concept of correlation	Hayran ve Ozbek, s.257-280			
11	Concept of Regression Modelling	Hayran ve Ozbek, 257-280			
12	The importance and steps of the scientific research process - Research in Health Sciences	Hayran ve Ozbek, s. 7-15			
13	Research methods: observational research design	Hayran ve Ozbek, s. 18-22			
14	Research Techniques - Experimental Researches	Hayran ve Ozbek, 7-15			
15	General Review of the course	Sumbuloglu, 15-18			
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources	
Hayran, Osman ve Özbek Hanefi "Sağlık Bilimlerinde Araştırma ve İstatistik Yöntemler (SPSS Uygulama Örnekleri ile Genişletilmiş 2. Baskı)", 2017, Nobel Tıp Kitabevleri. Sümbüloğlu, Kadir, and Vildan Sümbüloğlu. Biyoistatistik. Hatiboğlu, 2002. Field, Andy. Discovering statistics using SPSS. Sage publications, 2009. Rosner, B. (2015). Fundamentals of biostatistics. Wayne W. Daniel, Chad L. Cross Biostatistics: A Foundation for Analysis in the Health Sciences, 11th Ed. Wiley 2018, J. Richard Hebel, Robert J. McCarter Study Guide to Epidemiology and Biostatistics, 7th Edition A.J. Silman, g. J. Macfarlane, Macfarlane, Epidemiological Studies: A Practical Guide Third Edition 3.Ed	