

International School of Medicine / Medicine (English)

2023 - 2024 Academic Year

BIostatISTICS

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
BIostatISTICS	ISM3014683	Yearly	13+2	0	1
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Committee Course				
Course Coordinator	Prof.Dr. Mehmet KOÇAK				
Name of Lecturer(s)	Prof.Dr. Abdulbari BENER, Prof.Dr. Mehmet KOÇAK				
Assistant(s)					
Aim	This course begins with the introduction of basic statistical concepts, types of measurements and sampling strategies used in statistical analysis and types of research design, followed by examples of statistical graphics. Descriptive statistics as the first step in data analysis will be defined and examples will be discussed. After a brief introduction to the concept of probability, we will discuss some of the most commonly used probability distributions in statistical analysis, testing and modeling, such as Bernoulli, Binomial, Negative Binomial, Hypergeometric, Gaussian (Normal), Student-t, Chi-Square and F distributions. In the light of sampling distributions and the Central Limit Theorem, we will move from descriptive statistics to inferential statistics and introduce the concept of confidence intervals and hypothesis testing.				
Course Content	This course contains; Confidence Interval and its applications,Hypothesis Testing and its applications,Analysis of Variance and Non-parametric tests,Investigation of the association between two variables,Introduction to Linear Regression Modeling,Multivariable Linear Regression Models ,Introduction to Logistic Regression Modelling .				
Course Learning Outcomes				Teaching Methods	Assessment Methods
At the end of this lecture, we expect that students acquire the meaning of basic terms in biostatistics, recognize basic statistics, and develop an understanding of the utility of statistical graphics.					
At the end of this lecture, we expect that students distinguish different sampling methods, their advantages and disadvantages in different circumstances, develop understanding for various types of biases in research.					
At the end of this lecture, we expect that students develop an understanding of the theoretical and practical meaning of probability and recognize and appreciate probability laws.					
At the end of this lecture, we expect that students recognize different random variables, build familiarity with their probabilistic characteristics.					
At the end of this lecture, we expect that students develop a recognition of the importance and utility of the Central Limit Theorem and understand the mechanisms behind the probability distributions of sample statistics such as sample mean, sample proportion, and sample standard deviation.					
At the end of this lecture, we expect that students recognize the importance of the transition from descriptive statistics to inferential statistics and develop an understanding on how to measure the confidence we gain on population parameters through their predictors such as sample mean, sample proportion, and their two-population versions.					
Teaching Methods					
Assessment Methods					
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Confidence Interval and its applications	Sampling Distribution and Central Limit Theorem			
2	Hypothesis Testing and its applications	Concept of Confidence Interval			
3	Analysis of Variance and Non-parametric tests	Z-test and T-test			
4	Investigation of the association between two variables	Statistical Graphics and Tabulations			
5	Introduction to Linear Regression Modeling	Mathematical Functions			
6	Multivariable Linear Regression Models	Simple linear regression			
7	Introduction to Logistic Regression Modelling	Linear regression modelling			
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources
1. Jay Kerns: Introduction to Probability and Statistics Using R, 1st Edition, G. Jay Kerns, ISBN: 978-0557249794 2. Rosner B. Fundamentals of biostatistics. Cengage learning; 8th Edition, ISBN: 978-1305268920Course notes and presentations