Course Unit Title	Biostatistics
Course Unit Code	BME250
Type of Course Unit	Compulsory
Level of Course Unit	3rd year B.Sc. program
National Credits	3
Number of ECTS Credits Allocated	5
Theoretical (hour/week)	4
Practice (hour/week)	-
Laboratory (hour/week)	-
Year of Study	2nd year
Semester when the course unit is delivered	4
Course Coordinator	Assoc. Prof. Dr. Evren Hıncal
Name of Lecturer (s)	Assist. Prof. Dr. Burak Şekeroğlu
Name of Assistant (s)	Hediye Sarıkaya
Mode of Delivery	Face to Face.
Language of Instruction	English
Prerequisites	MAT101, (Calculus I)
Recommended Optional Programme Components	Excell

Course description:
Probability and counting, permutation and combination. Some probability laws, Axioms of probability. Random variables and discrete distributions. Continuous distributions. Joint distributions. Mathematical Expectation, Some Discrete Probability Distributions, Some Continuous Probability Distributions. Biomedical science problem applications.

Objectives of the Course:

- Understanding the concept of data analysis.
- Understanding the concept of probability and the concept of random variables.
- Understanding the difference between discrete and continuous random variables.
- Understanding the concepts of expectation, variance and standard deviation.
- Understanding the concepts of probability mass functions and cumulative distribution function for discrete, continuous and joint distributions.
- Understanding and learning the different types of discrete and continuous distributions.

Learning Outcomes

At the end of the course the student should be able to		Assessment
1	To make data analysis and calculate many statistics parameters	1
2	To solve problems related to probability and to construct the tree diagram of many sample spaces of many experiments.	1, 2
3	To know the relation of variability to production process.	1, 2
4	The applications of probability distributions in engineering.	1, 2

Assessment Methods: 1. Written Exam, 2. Assignment, 3. Project/Report, 4. Presentation, 5. Lab. Work

Course's Contribution to Program

		CL
1	Apply knowledge of mathematics, natural science with relevant to life science and multidisciplinary context of engineering science.	5
2	Analyse, design and conduct experiments, as well as to analyse and interpret data.	4

3	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	4
4	Function on multidisciplinary teams.	3
5	Control in design work, by using simulation, modelling and tests and integration in a problem solving oriented way.	4
6	Display an understanding of professional and ethical responsibility.	3
7	Communicate effectively aware of the non-technical effects of engineering.	1
8	Search technical literature and other information sources.	1
9	Recognize of the need for, and an ability to engage in life-long learning.	2
10	Exhibit a knowledge of contemporary issues.	1
11	Use the techniques, skills and modern engineering tools necessary for engineering practice to develop marketable products for the global market.	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	**Assessment**
1	1	Introduction to statistics and Data Analysis.	Assignment 1
2	2	Definition of probability, interpreting probabilities, sample spaces and events.	
3	2	Counting formulas, permutations and combinations Axioms of probability, conditional probability, independence and the multiplication rule, Bayes theorem.	Assignment 2
4	3	Random variable and probability distributions	
5	3	Discrete probability distribution, continuous probability density.	
6	3	Joint distributions.	Assignment 3
7			Midterm Exam.
8	4	Mathematical Expectation.	
9	4	Mathematical Expectation.	Assignment 4
10	5	Some discrete probability distributions.	
11	5	Uniform distribution, binomial, multinomial and negative binomial distributions.	
12	5	Hyper geometric and Poisson distributions.	Assignment 5
13	12	Some continuous probability distributions	
14	15	Normal and standard normal distributions.	Assignment 6
15			Final Exam.

Recommended Sources

Textbook:

Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye. 'Probability and Statistics for Engineers and Scientists', 8Edition, Pearson Education International, Pearson Prentice Hall. **Supplementary Course Material**

- J. S. Milton, Jesse C. Arnold, Introduction to Probability and Statistics, Principles and

Applications for Engineering and the Computing Sciences, Second Edition, McGraw-Hill, Inc.

Assessment

Attendance	5%	Less than 25% class attendance results in NA grade
Assignment	5%	
Midterm Exam	45%	Written Exam
Final Exam	45%	Written Exam
Total	100%	

Assessment Criteria

Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies

Course Policies

1. Attendance to the course is mandatory.
2. Late assignments will not be accepted unless an agreement is reached with the lecturer.
3. Students may use calculators during the exam.
4. Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations

ECTS allocated based on Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	6	4	24
Project/Presentation/Report	-	-	-
E-learning activities	6	2	12
Quizzes	-	-	-
Midterm Examination	1	2	2
Final Examination	1	2	2
Self-Study	15	4	60
Total Workload			160
Total Workload/30(h)			5.33
ECTS Credit of the Course			5