MATH 204 Probability and Statistics

MATH204 Probability and Statistics							
Course Name	**Course Code**	**Semester**	**h/w**	**Appl.**	**Lab. h/w**	**Credit**	**ECTS**
Probability and Statistics	MATH204	4	3	0	0	3	5

Prerequisites	No
Course Language	English
Course Type	Compulsory
Course Level	Undergraduate
Way of teaching	Online, face to face
Learning and teaching techniques	Expression, question answer, application

Course Objectives
To provide students with the ability to identify concepts such as random variables, probability density functions and to use them in problem solving. To ensure that they can calculate the expected value, variance and standard deviation. To gain students the ability to perform parameter estimation and hypothesis testing.

Course Educational / Learning Outcomes
Students who can successfully complete this course;

1.	Define random variables.
2	Define the concept of probability density function and uses it in problem solving.
3	Calculate the expected value, variance and standard deviation.
4	Make parameter estimation.
5	Make Hypothesis testing.

Topics Covered
Basic concepts of probability and statistics. Random variables, functions of random variables. Multivariable distributions and densities. Independent random variables. Correlation, application of statistics to engineering systems.

Weekly Topics and Related Preparation Studies

Week	Topics	Preparation
1-2	Descriptive statistics: Sample mean, sample median, and sample mode	Chapter 2.3
3	Elements of probability: Sample space and events, Venn diagrams, Axioms of probability	Chapter 3
4-5	Random variables and expectation: Random variables, jointly distributed random variables, Properties of the expected value, Chebyshev's inequality	Chapter 4
6	Special random variables: The Bernoulli and binomial random variables, The Poisson random variable, The hypergeometric random variable, The uniform random variable, Normal random variables, Exponential random variables	Chapter 5.1-5.6
7	Parameter estimation: Interval estimates, Estimating the difference in means of two normal populations, Evaluating a point estimator	Chapter 7.3-7.7
8	Midterm Exam	
9-11	Hypothesis testing: Significance levels, Tests concerning the mean of a normal population, Testing the equality of means of two normal populations, Hypothesis tests concerning the variance of a normal population, Hypothesis tests in Bernoulli populations, Tests concerning the mean of a Poisson distribution	Chapter 8
12-14	Regression: Least squares estimators of the regression parameters, Distribution of the estimators, Statistical inferences about the regression parameters, the coefficient of determination and the sample correlation coefficient, Analysis of residuals: assessing the model	Chapter 9

Textbook
Introduction to Probability and Statistic for Engineers and Scientists-Shaldon M.Ross, Nobel.
A First Course in Probability, S.M. Ross

Assessment System

Works	Number	Contribution
Attendance		
Laboratory		
Practice		
Field Study		
Course-Specific Internship (if applicable)		
Quizzes		
Homework		
Presentation		
Project		
Report		
Seminar		
Midterm Exams / Midterm Jury	1	% 40
Final Exam / Final Jury	1	% 60
Total		**% 100**
Contribution to the success grade of semester studies		% 40
Contribution of the studies at the end of semester to thesuccess grade		% 60
Total		**% 100**

Course Category

Basic Vocational Courses	X
Expertise / Field Courses	
Support Courses	
Communication and Management Skills Courses	
Transferable Skill Courses	

ECTS/Workload Table

Activities	Number	Time (h)	Total Workload
Course hours (Including exam week: 16 x total weekly coursehours)	14	3	42
Laboratory			
Application			
Course specific internship			
Field Study			
Out-of-class study time	14	2	28
Presentation/Seminar Preparation			
Projects			
Reports			
Homeworks			
Quizzes			
Preparation time for Midterm Exams / Midterm Jury	1	40	40
Preparation time for Final Exam / Final Jury	1	40	40
Total Workload	**(150/30 = 5)**		**150**