



**ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT  
COURSE INFORMATION FORM**

Course Title	Course Code
Probability	151225394

Semester in Program	Number of Course Hours per Week		ECTS
	Theory	Practice	
5	3	0	4

Course ECTS Credit Distribution				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	4			

Language of Instruction	Course Level	Course Type
English	Undergraduate	Required

<b>Prerequisite</b>	None
<b>Objectives of the Course</b>	To learn basic concepts of probability and combinatorial analysis, to be able to analyze continuous and discrete random variables, to be able to compute the expected value and standard deviation of a distribution, to compute the probabilities related to the popular distributions and jointly distributed random variables.
<b>Brief Course Content</b>	Sets, axioms of probability, random variables and functions of random variables, expectation and moments, discrete distributions, continuous distributions, jointly distributed random variables and their functions.

Learning Outcomes of the Course	Contributed POs	Teaching Methods *	Assessment Methods **
1 Learning basic concepts of probability and combinatorial analysis.	1, 2	1, 2	A, B, K
2 Learning random variables and acquiring knowledge of discriminating between basic discrete and continuous random variables.	1, 2	1, 2	A, B, K
3 Learning how to compute the expected value and standard deviations of probabilistic distributions.	1, 2	1, 2	A, B, K
4 To be able to compute real-world problems requiring probability information.	3, 4, 5	1, 2	A, B, K
5			
6			
7			
8			

\*Teaching Methods 1:Lecture, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

\*\*Assessment Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

<b>Main Textbook</b>	Sheldon Ross, A First Course in Probability, Prentice Hall.
<b>Supplementary Resources</b>	1) J. L. Devore, Probability and Statistics, Thomson Brooks/Cole, 2004. 2) H. Stark, J. W. Woods, Probability and Random Processes with applications to Signal Processing, Pearson Education, 2002.
<b>Necessary Course Material</b>	Scientific Calculator

Course Weekly Schedule	
1	Combinatorial Analysis
2	Axioms of Probability
3	Conditional Probability and Independence
4	Discrete Random Variables
5	Expectation and Variance
6	The Bernoulli and Binomial Distributions
7	Continuous Random Variables
8	Mid-Term Exams
9	Normal Random Variable
10	Other Continuous Distributions
11	Jointly Distributed Random Variables
12	Independent Random Variables
13	Probability Distributions of Joint Random Variables
14	Chebyshev's Inequality and Weak Law of Large Numbers
15	The Central Limit Theorem
16,17	Final Exams

Calculation of Course Workload			
Activities	Count	Time (Hour)	Total Workload (Hour)
Weekly classroom time	14	3	42
Weekly study time (review, reinforcing, preparation)	14	2	28
Homework			
Taking a quiz	3	1	3
Studying for a quiz	3	6	18
Oral exam			
Studying for an oral exam			
Report writing (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		<b>Total workload</b>	<b>130</b>
		<b>Total workload / 30</b>	<b>4.3</b>
		<b>Course ECTS Credit</b>	<b>4</b>

Assessment	
Activity Type	%
Mid-term	35
Quiz	25
Homework	
<b>Final Exam</b>	40
<b>Total</b>	100

<b>COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES</b> (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
<b>NO</b>	<b>PROGRAM OUTCOMES</b>	<b>Contribution</b>
<b>1</b>	a. Sufficient knowledge of mathematics	3
	b. Sufficient knowledge of basic sciences	2
	c. Sufficient basic engineering and Electrical-Electronics engineering knowledge	2
	d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems	2
<b>2</b>	Skill of defining, identifying, formulating and solving the complicated problems in Electrical-Electronics engineering and related areas by applying appropriate analysis and modelling methods.	2
<b>3</b>	Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.	2
<b>4</b>	To analyze and solve the complicated engineering problems:	2
	a. skill of developing, selecting and applying the required techniques and devices	2
<b>5</b>	b. skill of using information technologies effectively	2
	To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects:	2
<b>6</b>	a. skill of experimental design	3
	b. skill of performing the experiments, collecting the data and analyzing and interpreting the results	1
<b>7</b>	a. Skill of performing individual studies	1
	b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies	2
	c. Skill of effective oral and writing communication in Turkish	1
	d. Skill of improving and using foreign language knowledge	1
<b>8</b>	Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology	1
<b>9</b>	a. Skill of effective reporting, understanding the reports and preparing the design and production reports	1
	b. Skill of effective presentation and giving and getting clear and understandable instructions.	1
<b>10</b>	Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology	1
<b>11</b>	a. Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities	1
	b. Knowledge about legal regulations and standards of engineering	1
	c. Knowledge about project management, risk management and change management	1
<b>12</b>	a. Knowledge about project management, risk management and change management	1
	b. Awareness of the significance of entrepreneurship and innovation	1
	c. Knowledge about sustainable development	1
<b>13</b>	Knowledge about the effects of engineering applications and practices on the global and social health, ecology and safety, knowledge about the current problems in relation to the working areas of Electrical-Electronics engineering; and awareness of the legal issues resulting from engineering solutions	1
<b>14</b>	Knowledge about modern problems in local and universal scale	1

<b>LECTURER(S)</b>				
<b>Prepared by</b>	Prof. Dr. Hakan Cevikalp			

**Date:**06.07.2024