



ÇANKAYA UNIVERSITY

Faculty of Arts and Sciences

Course Definition Form

This form should be used for either an elective or a compulsory course being proposed and for a curriculum development process for an undergraduate curriculum at Çankaya University, Faculty of Arts and Sciences. Please fill in the form completely and submit the print-out carrying the approval of the Department Chair to the Dean's Office and mail its electronic copy to serpilkilic@cankaya.edu.tr. Upon receipt of *both copies*, the print-out will be forwarded to the Faculty Academic Board for approval. Incomplete forms will be returned to the Department. The approved form is finally sent to the President's office for approval by the Senate.

Part I. Basic Course Information

Department Name	MATHEMATICS	Dept. Numeric Code	2 7
Course Code	M A T H 2 2 3	Number of Weekly Lecture Hours	3
		Number of Weekly Lab/Tutorial Hours	2
		Number of Credit Hours	4
Course Web Site		ECTS Credit	0 6

Course Name <i>This information will appear in the printed catalogs and on the web online catalog.</i>	
English Name	Introduction to Applied Probability and Statistics
Turkish Name	Uygulamalı Olasılık ve İstatistiğe Giriş

Course Description <i>Provide a brief overview of what is covered during the semester. This information will appear in the printed catalogs and on the web online catalog. Maximum 60 words.</i>	
Basics of Statistics, Axioms of Probability, Events, Conditional Probability, Independence, Bayes' Rule, Random Variables, Joint Random Variables, Mathematical Expectation, Discrete Random Variables: Binomial, Hypergeometric, Negative Binomial, Geometric and Poison Distribution, Continuous Random Variables: Normal, Gamma and Exponential Distribution, Sampling Distributions, Central Limit Theorem, Regression, Correlation, Model Building.	

Prerequisites (if any) <i>Give course codes and check all that are applicable.</i>	1 st	2 nd	3 rd	4 th
	□ Consent of the Instructor	□ Senior Standing	□ Give others, if any. _____	
Co-requisites (if any)	1 st	2 nd	3 rd	4 th
Course Type <i>Check all that are applicable</i>	<input type="checkbox"/> Must course for dept. <input checked="" type="checkbox"/> Must course for other dept.(s) <input type="checkbox"/> Elective course for dept. <input checked="" type="checkbox"/> Elective course for other dept.(s)			

Course Classification <i>Give the appropriate percentage for each category.</i>					
Category	Mathematics & Natural Sciences	Engineering & Architectural Sciences	Technology	Administrative & Social Sciences	
Percentage	80	10	5	5	

Part II. Detailed Course Information**Course Objectives***Maximum 100 words.*

This course is intended to give the students the fundamental knowledge on Probability and Statistics with hand-on application.

Learning Outcomes*Explain the learning outcomes of the course. Maximum 10 items.*

By the end of the year students will be able to

- 1) set up probability models for a range of random phenomena, both discrete and continuous.
- 2) apply the notions of conditional probability,
- 3) recognise where the use of certain standard probability distributions would be appropriate.
- 4) understand correlation and build models with appropriate variables.

Textbook(s)*List the textbook(s), if any, and other related main course material.*

Author(s)	Title	Publisher	Publication Year	ISBN
R. Walpole, R. Myers, S. Myers, Keying Ye	Probability & Statistics for Engineers & Scientists, 9th Edition	Pearson	2016	978-0134468914

Reference Books*List, if any, other reference books to be used as supplementary material.*

Author(s)	Title	Publisher	Publication Year	ISBN
G. Jay Kerns	Introduction to Probability and Statistics Using R, 3rd edition	GNU Public License	2018	978-172634390

Teaching Policy*Explain how you will organize the course (lectures, laboratories, tutorials, studio work, seminars, etc.)*

3 hours of lecturing per week and 2 hours lab work. All lectures will be given by the instructor. There will be three exams: Two midterms and a final, comprising 40% and 40% of the course grade, respectively and 10 quizzes comprising 20% of the course grade. To use mathematics effectively, one need not just knowledge but skills as well. The only way to develop your math skills is by solving many problems. Therefore this aspect of the course is emphasized. The students will need a scientific calculator.

Laboratory/Studio Work*Give the number of laboratory/studio hours required per week, if any, to do supervised laboratory/studio work and list the names of the laboratories/studios in which these sessions will be conducted.*

There will be 2 hours of lab sessions each week, given by the instructor. The applications of theoretical concepts will be through the labs. Also, quizzes will be during the lab hours.

Computer Usage*Briefly describe the computer usage and the hardware/software requirements for the course.*

The ideas of probability that students learn in this course will be applied to several programming languages. This is why it is necessary to have lab settings with one computer for each student. There exists some softwares already in lab computers, so the proper one can be chosen to use.

Course Outline <i>List the weekly topics to be covered.</i>	
Week	Topic(s)
1	Basics of Statistics
2	Axioms of Probability
3	Conditional Probability and Independence
4	Random Variables and Probability Distributions, Mathematical Expectation
5	Binomial and Multinomial Distributions
6	Hypergeometric Distribution, Negative Binomial Distribution
7	Geometric Distribution
8	Poisson Distribution
9	Normal Distribution
10	Normal Approximation to the Binomial
11	Gamma and Exponential Distributions
12	Sampling Distributions : Sample Distribution of Means and The Central Limit Theorem
13	Regression and Correlation
14	Model Building

Grading Policy <i>List the assessment tools and their percentages that may give an idea about their relative importance to the end-of-semester grade.</i>								
Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage
Homework			Case Study			Attendance		
Quiz(es)			Lab Work	1	20	Field Study		
Midterm Exam	1	30	Classroom Participation			Project		
Term Paper			Oral Presentation			Final Exam	1	50

ECTS Workload <i>List all the activities considered under the ECTS.</i>			
Activity	Quantity	Duration (hours)	Total Workload (hours)
Attending Lectures (<i>weekly basis</i>)	14	3	42
Attending Labs/Recitations (<i>weekly basis</i>)	14	2	28
Compilation and finalization of course/lecture notes (<i>weekly basis</i>)	14	1	14
Collection and selection of relevant material (<i>once</i>)	1	10	10
Self study of relevant material (<i>weekly basis</i>)	14	3	42
Take-home assignments			
Preparation for lab work	1	5	5
Preparation for mid-term exams (<i>including the duration of the exams</i>)	1	5	5
Preparation of term paper/case-study report (<i>including oral presentation</i>)			
Preparation of term project/field study report (<i>including oral presentation</i>)			
Preparation for final exam (<i>including the duration of the exam</i>)	1	14	14
TOTAL WORKLOAD / 25			160/25
ECTS Credit			6

Total Workloads are calculated automatically by formulas. To update all the formulas in the document first press CTRL+A and then press F9.

Part IV Approval

Proposed by	Faculty Member <i>Give the Academic Title first.</i>	Signature	Date
	Dr.Öğr. Üyesi Ceylan YALÇIN		

Departmental Board sitting date		Sitting number		Motion number	
Department Chair	Dr.Öğr. Üyesi Erkan Murat TÜRKKAN	Signature		Date	

Faculty Academic Board sitting date		Sitting number		Motion number	
Dean	Prof. Dr. Fahd JARAD	Signature		Date	

Senate sitting date		Sitting number		Motion number	
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