

TOBB UNIVERSITY OF ECONOMICS AND TECHNOLOGY
DEPARTMENT OF ECONOMICS
ECON 555-655 Research Methods
(Part 2: Probability and Statistics)
Fall 2019

Instructor: Asena Caner, Ph.D. **E-mail:** acaner@etu.edu.tr;
Office: 281, **Web Page:** <https://acaneretuedutr.weebly.com/ikt-555-655.html>

Lecture Hours: Monday 11:30-14:20 [classroom # 297]

Office Hours: With appointment (Please contact me during lectures or via e-mail.)

Course Description: This part of the course focuses on the main concepts of probability and statistics. We will review the basic elements of probability theory and probability distributions, work on generating the distributions of functions of random variables and sampling distributions. The remaining part of the course will focus on statistical inference (point and interval estimation, and statistical tests). Although there are no official prerequisites for the course, it is assumed that the students are familiar with calculus.

Aim of the course: This course aims to familiarize the students with the main techniques that are used in quantitative economic research and to prepare students to conducting independent research. The need for the basic concepts of probability and statistics is not restricted to doing empirical research and econometric analyses; the basic concepts are used in many fields of economics such as industrial organization, finance, and game theory, to name a few. Students must practice solving questions in order to master the material in this course. For this reason, homework assignments will be given during the course. It is important that the students use the assignments as an opportunity to learn. Finally, since it is impossible to cover all topics of probability and statistics in a few weeks, students must learn how to learn on their own.

Evaluation:

Written Exam 25 %

Homework Several assignments, a total of 8 points

(The remaining 66% of your grade will be given based on your performance in the other parts of the course)

Textbooks:

Main text:

Robert Hogg, Joseph W. McKean, and Allen Craig (shortly "HMC"), *Introduction to Mathematical Statistics*, 8th edition, Pearson.

Students will also find the following texts helpful:

- George Casella and Roger Berger, *Statistical Inference*, 2001, Duxbury Press.

- Takeshi Amemiya, *Introduction to Statistics and Econometrics*, Harvard University Press, 1994.

- A.N. Shiryaev, *Probability*, Graduate Texts in Mathematics, 1996, Springer-Verlag New York.

Topics:

Probability and Distributions; Multivariate Distributions (HMC Ch.1 - 2)	Week 1-2
Some Special Distributions; Elementary Statistical Inference (HMC Ch.3 - 4)	Week 2-3
Consistency, Limiting Dist.; Maximum Likelihood (HMC Ch.5 - 6)	Week 3-4
Tests of Hypotheses (HMC Ch.8)	Week 4
<i>Written exam (on Saturday, Oct 26, 2019)</i>	

Rules:

1. Students are expected to attend lectures regularly. Attendance will be followed.
2. In the exams, students will be responsible for all the material covered in class.
3. Homework assignments must be submitted on time; late submissions will not be accepted.
4. Students can work on homework assignments in groups (group-study is encouraged), but each student should turn in her own answers. (See note 5 below.)
5. Plagiarism and cheating: Students are expected to refrain from giving or receiving aid in examinations, or in any other work that is to be used by the instructor as the basis of grading. Furthermore, they are expected to do their share and take an active role in seeing to it that others as well as themselves obey these rules. Plagiarism and cheating are serious issues; therefore, disciplinary action will be taken upon any suspicion that these rules are violated. (Plagiarism is defined as the use, without giving reasonable and appropriate credit to or acknowledging the author or source, of another person's original work, whether such work is made up of code, formulas, ideas, language, research, strategies, writing or other form(s).)
6. Make-up exams: Exam attendance at the specified time is required. A make-up exam will be given only under the condition that the student has a serious health or family condition and can provide a proof of his condition accepted by the faculty council. Make-up exams, if given, will be harder than exams taken at regular times.
7. Students can (and should) see their graded exams. If the student thinks she has been graded unfairly or incorrectly, she should inform the instructor immediately. The only reason for a grade change is the existence of errors in grading. Requests for a better grade for any other reason will be declined.