

# MATH 401

## PROBABILITY THEORY

**METU Credit & ECTS Credit:** (3-0) 3 and 6.0

**Prerequisites:** None

**Instructor:** Yıldırım Ozan, M-217

**Schedule:** Monday 10:40-12:30 and Wednesday 09:40-10:30 M-203 and also as online Zoom Lecture. Recorded lecture videos and lecture notes will be posted on the internet.

**Web Site:** <http://www.metu.edu.tr/~ozan>

**Office Hours:** Friday 12:40-13:30 in Room M-203 and also via Zoom. Also by appointment.

**Textbook:** Elements of Probability Theory by H. Körezlioğlu, A. B. Hayfavi, Y. Y. Okur

**Exams and Grading:** There will be 2 midterm exams and a final exam. Each midterm exam will worth 35% and the final exam will worth 30% of the total grade. The midterms will be written exams, whereas the final exam will be an oral exam covering all the topics. Throughout the semester I will prepare several problems, mostly theoretical. The oral exam content will be from these problems and written exams questions.

**Exam Dates:** Midterm 1: December 9, 2021, Thursday at 17:40.

Midterm 2: January 20, 2021, Thursday at 17:40.

### **Tentative Weekly Syllabus:**

- 1) Events and Probabilites (2 weeks)
- 2) Equally Likely Outcomes (1 week)
- 3) Random Variables and Their Distributions (1 week)
- 4) Random Vectors and Their Distributions (3 weeks)
- 5) Expectations of Random Variables (2 weeks)
- 6) Moments and Characteristic Functions (1 week)
- 7) Conditional Expectations (1 week)
- 8) Gaussian Vectors (1 week)
- 9) Convergence of the Averages (1 week)
- 10) Results from Measure Theory (1 week)

The last topic will be covered during the semester whenever we need those.