

IE 48002 / IE 58005 Advanced Statistics with R
Fall 2020 Syllabus

- **Lecture Times:** M 13:40 – 15:30
T 9:40 – 10:30

R Sessions: R 10:40 – 11:30

- **Instructor:** Semih Sezer
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Office Hours: By appointment.

- **Course description:** The course aims to discuss important topics in statistics in a mathematically rigorous way. The topics that will be discussed include sampling distributions and asymptotics, point and interval estimations, hypothesis testing, ANOVA and regression analysis. Implementations will be illustrated with R.
- **Lecture Material:** We will follow the lecture notes. They will be posted on SUCourse+ Course Management System (at <https://sucourse.sabanciuniv.edu/plus/>).

Supplementary Reading for R:

- *Introductory Statistics with R*, P. Dalgaard, 2nd Ed., Springer

Recommended (Optional) Reading for Statistics:

- *Introduction to Mathematical Statistics*, R.V. Hogg, J.W. McKean, A.T. Craig, 7th Ed., Pearson

- **Course Content (Tentative Plan – as time permits):**

- Probability Theory
- Sampling Distributions
- Sufficient Statistics
- Point Estimation
- Interval Estimation
- Some Special Tests
- ANOVA
- Linear Regression
- Convergence Concepts and Limit Results
- Delta Method

- **Grading Policy:**

There will be two exams: one midterm and one final. The weights of these exams will be 45% and 55% respectively.

Both exams will be take-home exams. The midterm will be on December 4th, and the final will be on January 7th.

Update note on the Exam II date: After one week of break is added before the final period in the academic calendar, the Exam II date is changed as January 11th.

- It is students' responsibility to follow all the announcements made in class and those made via SUCourse+ Course Management System.