IE 436 / IE 536 Monte Carlo Methods in Finance
Spring 2023 - 24 Syllabus

- **Lectures:** W 12:40 - 13:30 FENS L063
  R 12:40 - 14:30 FENS L029

- **Instructor:** Semih Sezer
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- **Course description:** The course aims to introduce the Monte Carlo methods and techniques used in mathematical finance. Many problems of mathematical finance involve computing expectations and probabilities. Pricing various derivatives, computing default/ruin probabilities, finding optimal/well-performing portfolios are some examples of such problems. In the course, after discussing the basics of probability and simulation, we learn how Monte Carlo methods apply to these problems. Implementations are illustrated with R.

- **Reference material:**

  - *Monte Carlo Methods in Financial Engineering,* Springer, Author: Paul Glasserman
  - Lecture discussions (additional material/content we discuss and write on the board)
  - R Tutorials on SUCourse+

- **Tentative schedule:**

  - Mathematical foundations
  - Variable generation techniques
  - Sample path generation
  - Variation reduction methods
  - Implementations in various problems of mathematical finance

- **Grading policy and other items:**

  There will be one midterm and one final. Both will be in class (non-online) exams. Their weights are as follows:
    Midterm: 45%
    Final: 55%

  Midterm date: April 25th, lecture time 12.40-14.30.
  Final date will be announced by the Student Resources.

  Make-up policy: There will be a single make-up exam after the final exam period. The make-up exam grade will replace all your missing exam grades. The make-up exam will be cumulative. Its date will be announced later.