• **Hours/Room:** W 15:40 - 17:30  FENS G035  
F 12:40 - 13:30  FENS G032

• **Instructor:**  Semih Sezer  
Office: FENS L024  
Email: sezer@sabanciuniv.edu  
Phone: 0216 483 9856

• **Course description:** The objective of the course is to introduce basic stochastic models and techniques used in mathematical finance. The first half of the course is dedicated to discrete-time models, the other half to their continuous-time counterparts. The topics covered include pricing and hedging in binomial models and Black-Sholes models, fundamental theorems of asset pricing, martingales, Brownian motion, Stochastic integration, Itô rule. Depending on the progress in class, we also briefly discuss SDE’s as they appear in continuous models.

• **Textbook:** *Stochastic Calculus for Finance (Vol I, II)*, Springer, Author: Steven E. Shreve

• **Tentative schedule:**

  Binomial Market Models: (4 to 6 weeks)  
  Single and Multi-Period Models  
  Fundamental Theorems of Arbitrage  
  Risk-neutral Pricing and Hedging  
  Martingales, Random Walk

  Continuous-time Models: (remaining weeks)  
  Brownian Motion  
  Stochastic Integration and Ito Calculus  
  Feynman-Kac Formula  
  Pricing and Hedging in continuous time  
  and more (stochastic control problems in finance)… as time permits

• **Grading policy and other items:**

  - There will be one midterm and one final. Their weights are as follows:  
    Midterm: 45%  
    Final: 55%

    Midterm date: Nov 29th (lecture time 15.40-17.30)  
    Final date will be announced by the Student Resources.

  - 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.
- It is students’ responsibility to follow all the announcements made in class and those made via SUCourse+.