2021FA - ADV SIMULATN METHODS 16:958:587:01

Stat 958:587 Advanced Simulation Methods for Finance

General Information:

Teacher:

Name: Min-ge Xie

Email Contact: mxie@stat.rutgers.edu

Office: Room 574, Hill Center

Meeting Hours: Thursday 6:00pm - 9:00pm (10 minutes break in between)

Meeting Place: SEC 111 (Busch Campus)

Office Hours: Every Thursday after class -10:00pm or by appointments (ZOOM meeting only)

Textbooks (Recommended; not required):

- Jackel P., Monte Carlo Methods in Finance (Wiley)
- Glasserman P., Monte Carlo Methods in Financial Engineering (Springer)
- Robert, C.P. and Casella, G. Monte Carlo Statistical Methods (Springer)
- Venables, W.N. and Ripley, B.D., Modern Applied Statistics with S-Plus (Springer)

Syllabus and Emphasis:

The emphasis of this course will be on Modern simulation methods and advanced statistical computing techniques for financial applications. We will introduce

- Monte-Carlo simulation methods
- Bootstrap methods
- Markov chain Monte Carlo methods
- Bayesian method and computing
- Variance reduction technique
- VaR computing
- Sequential Monte Carlo method (if time allows)
- Conformal prediction algorithm (if time allows)

etc.

Recommend R for programming and data analysis. JAVA and C/C++ are also acceptable

Grading:

Homework assignments I -- In-class leading discussions & amendment: 25%

Homework assignments II -- Completions: 20%

Final project and in-class presentation: 25%

Final exam: 30%

Overall letter grade: A = 90+; B+ = 82 – 89.99; B = 75 – 81.99; C+ = 65 – 74.99, etc.