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.