

Stat 958:587 Advanced Simulation Methods for Finance

General Information:

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Office: Room 574, Hill Center

Meeting Hours: Thursday 6:40pm - 9:30pm (10-15 minutes break in between),

Meeting Place: ARC 206 (Busch Campus)

Office Hours: Wednesday 11:00am-12:00pm or by appointments

TA information:

Mr. Jieli Shen; email: jieli.shen@rutgers.edu; Office: Room 557, Hill Center; Office hours: Tuesday 2:30-4:30pm

Textbooks (Recommended):

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

Grading:

Homework assignments (30%), midterm exam (25%), final exam (40%) and class participation (5%).

The final letter grades will be determined by the order of combined scores. A predetermined grading curve (1/3 A; 1/3 B+; 1/3 B and below) will be strictly imposed.

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,
- Variance reduction technique,
- Bootstrap methods,
- Markov chain Monte Carlo methods,
- Bayesian method and computing
- Sequential Monte Carlo method,
- Hidden Markov models (if time allows)
- etc.

Recommend C++, JAVA, or R for programming and data analysis.