Optimization and simulation

Summary
Master state-of-the art methods in discrete optimization and simulation. Work involves:
- reading the material beforehand
- class hours to discuss the material and solve problems
- homework

Content
Part 1: Simulation
Sheldon M. Ross (1997) Simulation
Draws (Chapters 4 & 5)
Discrete event simulation (Chapter 6)
Statistical data analysis, bootstrapping (Chapter 7)
Variance reduction techniques (Chapter 8)
Markov Chain Monte Carlo methods (Chapter 10)

Part 2: Optimization:
Classical optimization problems (chapter 25)
Greedy heuristics (section 27.1)
Neighborhood and local search (section 27.2)
Diversification (sections 27.3 and 27.4)

Note
5 weeks on nonlinear optimization + 8 weeks on simulation

Keywords
optimization, simulation

Learning Prerequisites
Required courses

Supervision
Office hours
Yes
Assistants
Yes
Forum
Yes

Resources

Bibliography
Ross S. (2013) Simulation, Elsevier

Ressources en bibliothèque
• Optimization : principles and algorithms / Bierlaire M.
• Simulation / Ross S.

Websites
• http://transp-or.epfl.ch/

Moodle Link
• http://moodle.epfl.ch/course/view.php?id=6791