



# SIE Seminar

## Design of Complex Systems via Simulation Optimization

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**MONDAY,  
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**2:00-3:00 PM**

**ENGR 301**

Simulation has become an invaluable tool to analyze complex systems, and is used across disciplines including engineering, manufacturing and social sciences. However, optimization based on simulation models is challenging, because the simulation model is usually a black box, because running a simulation to evaluate a solution is computationally expensive, and also because many simulation models are stochastic, turning the optimization problem into a stochastic problem.

The seminar will explain two algorithms that are frequently used for simulation optimization: Metaheuristics and Bayesian optimization. It will then discuss ways of improving the ability of metaheuristics to cope with noise, and how Bayesian optimization can be used to take into account uncertainty about the input parameters of the simulation model. The seminar concludes with two application examples in the area of traffic light control and scheduling.

**Sponsored by the Dept. of Systems & Industrial Engineering**  
**More info contact Mia Schnaible 621-6551 <http://www.sie.arizona.edu>**