

IEEM 516000

## Advanced Operation Research

**Semester: Fall 2021**

**Number of credit hours: 3**

Instructor: Professor Kuo-Hao Chang ([birdhow@gmail.com](mailto:birdhow@gmail.com))  
Room 713R. Phone (03) 5742337

Lecture Time: Friday 9:00-12:00 pm

Office Hours: W 4-6 pm or by appointment

**Prerequisites:** IEEM510300 (Stochastic Processes) or equivalent probability course. Basic programming skills are also required.

**Textbook:**

- (1) *Introduction to Stochastic Search and Optimization (Estimation, Simulation and Control)* by James C. Spall, John Wiley, 2003.
- (2) *Stochastic Programming (Mathematics and Its applications)* by András Prékopa, Kluwer Academic Publishers, 2010.
- (3) *Lectures on Stochastic Programming (Modeling and Theory)* by Alexander Shapiro, Darinka Dentcheva and Andrzej Ruszczyński, SIAM-Society for Industrial and Applied Mathematics, 2009.

**Overview:** This is a graduate-level, research-based class. We will be focused on some special topics in the OR area or some new techniques related with it. This can include, but not limited to, AI, stochastic optimization, game theory and many more. Students will be asked to study given topics and the most recent papers related to it.

Grade Element	Weighting
Paper study and Presentation	60%
Class participation	20%
Assignment	20%

**Project and Presentation:**

Students will tackle a number of cases throughout the semester and write technical reports. Some programming work will be need. The reports will be collected and graded.

**Paper Assignment and Presentation:**

Each student will make two presentations for the papers they choose in the whole semester. The papers will be provided by the instructor. The presentation time, including discussion, is about one hour.

**Assignment**

Assignment will be given from time to time. These assignments require a certain level of coding ability to finish. We expect to give at least 6 assignments in the whole semester.