

IEMS 490: Special topics: Operations Research Modeling in Humanitarian and Non-Profit Logistics Winter 2014

Instructor: Karen Smilowitz
Office: Tech D239
Office Hours: Wednesday 3–4, Friday 2–3
Phone: (847)491-4693
Email: ksmilowitz@northwestern.edu
Class Time and Location: TuTh 12:30PM - 1:50PM (Tech M228)

COURSE DESCRIPTION

This course will cover a range of topics related to the modeling of logistics problems in humanitarian and non-profit settings. The course will examine issues from both an academic and practitioner perspective, with guest speakers and an exploration of the academic and practitioner literature.

Course material focuses on formulating complex logistics problems, teaching students to translate real-world engineering decisions and constraints into analytic models, and address the challenging data issues in this space.

LEARNING OBJECTIVES

1. To develop an understanding of practical methods for solving difficult logistics and transportation system design problems in humanitarian and non-profit applications;
2. To introduce students to methods for the development and assessment of solution approaches for these problems;
3. To expose students to recent research in humanitarian and non-profit logistics; and,
4. To engage students in interactive discussions of humanitarian and non-profit logistics.

PREREQUISITES

Students are expected to have completed some coursework in mathematical programming, large-scale optimization and logistics [at least one of the following: 450, 480, 489; or consent of the professor].

COURSE ASSESSMENT

1. Weekly presentations (40%).
2. Weekly write-ups (40%).
3. Participation (20%).

WEEKLY PRESENTATIONS AND WRITE-UPS

On the Thursday of each week, a new topic in humanitarian and non-profit logistics will be introduced, often with a brief presentation from a guest speaker. At the end of the session, a problem will be posed, either in the form of a case study, a logistics problem to model, a data set to analyze, etc.. The following Tuesday, the students will present their solution and the following Thursday submit a brief write-up of the problem. In the end, you will have a set of nine potential topics of research in humanitarian and non-profit logistics. You may work in teams of 2-3 students.

1	Tuesday, 1/7	Thursday, 1/9
	Introduction to humanitarian logistics	Disaster response and preparedness <i>Prof. Irina Dolinskaya</i> Relief routing and response
2	Tuesday, 1/14	Thursday, 1/16
	Disaster response and preparedness Relief routing and response	Disaster response and preparedness <i>Dr. Jennifer Chan</i> Data streams
3	Tuesday, 1/21	Thursday, 1/23
	Disaster response and preparedness Data streams	Disaster response and preparedness Pre-positioning of supplies
4	Tuesday, 1/28	Thursday, 1/30
	Disaster response and preparedness Pre-positioning of supplies	Disaster response and preparedness <i>Jim McGowan</i> Red Cross
5	Tuesday, 2/4	Thursday, 2/6
	Disaster response and preparedness Red Cross	Humanitarian logistics <i>Prof. Sarang Deo</i> Medical care delivery in Africa
6	Tuesday, 2/11	Thursday, 2/13
	Humanitarian logistics: Medical care delivery in Africa	Humanitarian logistics <i>Deloitte Emerging Markets Group</i> Implementation of care delivery
7	Tuesday, 2/18	Thursday, 2/20
	Humanitarian logistics Implementation of care delivery	Technology-enabled collaboration <i>Dr. George Chiampas</i>
8	Tuesday, 2/25	Thursday, 2/27
	Technology-enabled collaboration	Non-Profit logistics <i>Dr. David Buchanan, date not final</i> Community based-health care
9	Tuesday, 3/4	Thursday, 3/6
	Non-Profit logistics Community based-health care	Non-Profit logistics <i>Joseph Warfel, IEMS</i> Food distribution
10	Tuesday, 3/11	Thursday, 3/13
	Non-Profit logistics Food distribution	Conclusion/Wrap-up session