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

Instructor: Karen Smilowitz
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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.

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