

Mechanical and Industrial Engineering Research Seminar Series

Presents
Professor Jennifer Pazour



Assistant Professor

Department of Industrial Engineering and Management Systems
University of Central Florida

Topic: “Analytical Modeling of Logistics System Design”

Date: Friday, November 22nd, 2013

Time: 10:30am to 11:30am (Refreshments from 10:00am to 10:30am)

Location: 129 Hurtig Hall

Abstract: Logistics is concerned with the efficient flow and storage of goods from point of origin to point of consumption, and plays an important role in our day-to-day lives and our economy. To illustrate, consider the “journey” of the things we use in our lives. Think about the succulent strawberries in your lunch that provide nourishment, think about the medical supplies necessary to keeping us healthy, or think about the smart phone that you constantly check. Logistics has enabled us to enjoy all of these things. My research focuses on greater understanding of logistic system design through the development of analytical decision-making models. This presentation will focus on important problems in distribution center design and in military logistics.

Reshuffling is a warehouse strategy where the storage locations of items are changed during idle time to create a new layout configuration that will improve picking and put-away performance. This study investigates how to optimize reshuffling and quantifies the effect of common assumptions in the reshuffling literature. The contributions of this study include the first mathematical programming formulation for the general reshuffling problem, a lower bound that demonstrates the intrinsic complexity of the problem, several heuristics based on the problem structure, and managerial insights on the performance of reshuffling policies in various environments. Experimental results suggest that the proposed insight-based heuristics statistically improve upon a benchmark heuristic by relaxing how items in cycles are handled and incorporating double-handling.

Seabasing is a strategy implemented by the US Navy that allows Joint Forces to be supported from the sea. From a logistics perspective, seabasing will transform a set of vessels into floating distribution centers that eliminate the need for a stockpile of materials on shore. Vital components of seabasing include selective offloading capabilities, ship-to-objective logistics via aerial delivery, and vessel-to-vessel cargo replenishment.

Sea-based logistics operate in a challenging and uncertain environment and have unique mission characteristics; consequently, sea-based logistics require the development of specific logistics models. We are currently building analytical models to help design and evaluate responsive sea-based logistics delivery systems with imperfect visibility.

Bio-Sketch: Jennifer A. Pazour is an assistant professor of Industrial Engineering and Management Systems at the University of Central Florida. Jen holds three degrees in Industrial Engineering (a B.S. from South Dakota School of Mines and Technology, as well as a M.S. and Ph.D. from the University of Arkansas). Her research interests involve developing mathematical models to aid in the understanding and dynamics of logistic challenges and application areas include distribution center design, material handling systems, health care, military, and transportation. She teaches courses in operations research, supply chain management, and industrial engineering applications in the service sector. Her research has been published in peer-reviewed journals including IIE Transactions, Interfaces, and Health Care Management Science. She is a recipient of the Young Investigator Program from the Office of Naval Research (2013), a Research Start Up grant from the Material Handling Institute (2013), a Doctoral Dissertation Enhancement Project from the National Science Foundation (2010), and national fellowships from Tau Beta Pi (2006), the Institute of Industrial Engineers (2005, 2007, 2009), and the Material Handling Education Foundation (2007 – 2010). More information and specific research project details can be found at her research and teaching blog: <http://jenpazour.wordpress.com/>.

Hosted by: Professor Marilyn Minus

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