Kristin Sahyouni  
PhD Candidate, Department of Industrial Engineering and Management Sciences and Transportation Center Dissertation Year Fellow  
McCormick School of Engineering & Applied Science  
Northwestern University  

Logistic Network Design For Closed-Loop Supply Chains  

Thursday, March 29, 2007  
2:00 – 3:00 pm  

Location:  
The Transportation Center  
Chambers Hall,  
Lower Level Conference Center  
600 Foster, Evanston  

Abstract: Closed-loop supply chain research addresses the impact of product returns and remanufacturing activities on total supply chain performance. Recent research on reverse logistics and closed loop supply chains has produced a number of specialized network design models for the collection of used products. In this work we develop three generic facility location models for the integrated distribution of new products and collection of used or returned products to accommodate a variety of applications and industries. These models quantify the value of integrated decision making in the design of forward and reverse logistics networks throughout different stages of a product’s life cycle. We measure the implications of integrated decision making by comparing the total logistics costs of our joint optimization models to the cost of solutions in which forward and reverse facility location decisions are made sequentially or independently of one another. In addition, we discuss the implications of integrated decision making on network configuration and introduce a new network similarity measure to quantify this analysis. Extensions of this work examine how a firm’s network design decisions are impacted by customer behavior, specifically when demand for new products and customer participation in voluntary returns collection programs are distance-sensitive. Preliminary computational results and insights are discussed.  

Bio:  
Kristin Sahyouni is a Ph.D. candidate in the department of Industrial Engineering and Management Sciences at Northwestern University. Her research interests are in the strategic planning and operation of closed-loop supply chain systems; her dissertation investigates the impact of reverse logistics activities on supply chain performance. Kristin has worked at Motorola and United Parcel Service, and has also served as an instructor at Northwestern’s School of Engineering. Kristin’s work has been recognized with a NSF graduate research fellowship, a NHI Eisenhower transportation fellowship, and a Northwestern Transportation Center dissertation fellowship. She holds a B.S. degree in Industrial and Systems Engineering from the University of Southern California and a M.S. degree in Industrial Engineering and Management Sciences from Northwestern University.