Department of Industrial and Systems Engineering

THURSDAY
OCTOBER 20, 2016
3:00 PM – 4:00 PM
FAB 103
(FINE ARTS BUILDING B)

ISE ASSOCIATE PROFESSOR

Elif Akçalı

Elif Akçalı serves as an Associate Professor and Associate Chair of Industrial and Systems Engineering at the University of Florida. She is in the inaugural class of UF Entrepreneurship Faculty Fellows in the Center for Entrepreneurship & Innovation in Warrington College of Business Administration. She was a Creative Scholar-in-Residence in the School of Theater + Dance. Her research and teaching interests are in inventory and supply chain systems, lean production systems, sustainability, and creativity.

An Analytical Investigation of Alternative Batching Policies for Remanufacturing Under Stochastic Demands and Returns

We consider a fundamental make-to-order remanufacturing setting characterized by a stochastic used-item return process along with a stochastic remanufactured-item demand process faced by a remanufacturer. We investigate five batching policies inspired by shipment consolidation practice (two periodic policies and three threshold policies) in the make-to-order environment of interest. Under each policy, we explicitly take into account for all relevant costs, including the fixed operational costs (associated with remanufacturing of used-items and dispatching of remanufactured-item orders in batches) and inventory related cost (associated with used-item inventory holding costs and remanufactured-item order waiting costs). We develop analytical models with the objective of minimizing the long-run average expected total cost of the remanufacturer for computing the policy parameters of interest. Since the exact optimal policy parameters are not analytically tractable, we propose analytically tractable approximations on the cost functions for the policies. Through numerical investigation, we demonstrate that the approximate policy parameters work impressively well in terms of the actual cost performance. Then, we extend the five policies by considering disposal options when needed. For this extension, an effective parameter-based approximation is developed for estimating the policy parameters. Additional numerical experiments demonstrate the effectiveness of the proposed approximation approach. This work is conducted jointly with Dr. Sila Cetinkaya (Southern Methodist University) and Dr. Yi Zhang (Maxim Integrated).

- Free & Open To All -
Thursday, October 20, 2016 ◉ Time: 3:00 pm – 4:00 pm
Location: FAB 103 (Fine Arts Building B)