Spring 2018 Graduate Seminar Series

Integrated Decision Support Tools for Multi-Lifecycle Sustainable Product Design

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Abstract
Sustainable manufacturing requires an emphasis on ensuring increased economic, environmental and societal performance at the product, process and systems levels. At the product level, enhancing sustainability performance requires an emphasis on multi-lifecycle closed-loop material flow to recover materials and embedded energy from end-of-life (EoL) products from one lifecycle and channeling them into products manufactured subsequently. Thus, product EoL strategies, such as product/component reuse, component remanufacturing and material recycling must be considered early during product design to reduce total lifecycle cost, enhance product sustainability, and promote corporate social responsibility. An overview of a suite of decision support tools developed for sustainable product design to identify optimal configurations, evaluate sensitivity of key performance metrics and assess potential influences of risk events on key metrics will be shared through this presentation. The approach followed for digital integration of the tools to access data from enterprise-wide systems and to share results with decision makers will also be briefly covered.

About the Speaker
Dr. Fazleena Badurdeen is an Associate Professor in the Department of Mechanical Engineering at the University of Kentucky and also serves as the Director of Graduate Studies for the Manufacturing Systems Engineering MS Program. She is affiliated to the Institute for Sustainable Manufacturing, at the University of Kentucky where she leads the Manufacturing Systems and Sustainable Supply Chains Research Group. Dr. Badurdeen’s research is focused on the design and management of manufacturing systems and supply chains to enhance efficiency, productivity and sustainability performance. More recent research is in the area of developing tools and techniques to enable value creation through sustainable manufacturing, including methods to facilitate more sustainable product design for closed-loop material flow. Her research has been supported by external funding from various federal funding agencies as well as from industry. Dr. Badurdeen received her PhD in Integrated (Industrial and Mechanical) Engineering and MS in Industrial Engineering both from Ohio University, Athens, OH. She also holds an MBA from the Postgraduate Institute of Management, Sri Lanka, and obtained her BS in Engineering from the University of Peradeniya in Sri Lanka.