



## Bernard Sarchet Graduate Seminar Series



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Harbin Institute of Technology, China

### Sustainability Assessment & Energy Efficiency Oriented Simulation

**Monday, November 30<sup>th</sup>**  
**3:00 - 3:50 pm (CST)**

**in Room 213 Butler-Carlton Hall\* & via WebEx**

**Abstract:** Sustainability assessment is considered as one of the crucial strategies to realize sustainable design and manufacturing process. In this talk, I will present a modular design methodology for achieving sustainable design as well as fulfilling functional requirements with a novelty 6R concept (reuse, recycle, reduce, recover, redesign, and remanufacture). For the sustainable assessment of machining process, a new approach was proposed on the consideration of environmental, economic, and social criteria for selecting the optimal machining strategy from sustainable manufacturing viewpoint. Then, an energy consumption modeling was developed to characterize the relationship between machining process variables and energy consumption for material removal processes based on thermal equilibrium and empirical modelling. Face milling test was conducted on CNC machining center to illustrate validity of the proposed method to define sustainability performance of machining process, and optimize the energy-saving of a machining workshop.

**Bio:** Dr. Jihong Yan is a Professor (since 2005) in Advanced Manufacturing at Harbin Institute of Technology (HIT), she is also the deputy dean of School of Mechatronics Engineering at HIT. Her research is mainly focused on the area of sustainable manufacturing and advanced maintenance of machinery, she has authored and co-authored over 80 research papers and edited 3 books. As a PI, Dr. Yan has worked on and accomplished 15 projects in the sustainability and maintenance-related areas, funded by the NSF of China(NSFC), NSF-NSFC joint-project, National High-tech project, High-tech funding from industries, and so on. She teaches the courses in Industrial Engineering for U/G levels and has won several national/university teaching awards. Dr. Yan ever was a Postdoctoral researcher with the Centre for Intelligent Maintenance Systems (IMS) funded by NSF in the US for 3 years(2001-2004), mainly focused on prognosis algorithm development and application. Then she joined Pennsylvania State University to work on personnel working performance related topics(2004-2005).

*\* No food or drink is allowed in this room.*