



Industrial and Systems Engineering & Engineering Management



EXPLORE ISEEM at UAHuntsville

From the dawn of industrial engineering, the aim has always been to improve systems across the complete spectrum of elements, including the human operations, the economic and of course the technical. The tradition is still alive in research in engineering management that seeks to understand both how to lead and to facilitate the team building that is integral to modern engineering problem solving. The tradition is alive in systems engineering, which attempts to understand systems throughout the entire life cycle, from cradle to grave --- so that the whole will be not only greater than the sum of the parts, but reliable, efficient and effective. And the tradition is alive in the tools of quality, such as Six Sigma and the statistical design of experiments. Our ambition is to further the fields of industrial engineering, systems engineering, and engineering management.

The graduate program in Industrial and Systems Engineering and Engineering Management provides degree programs at both the Masters and Doctoral with focus in engineering management, systems engineering, and industrial engineering topics. In addition students without an engineering background can obtain quantitative tools in operations research through the MSOR to formulate and analyze stochastic or simulation models and to formulate, solve and understand optimization techniques.

Our program has a diverse blend of both full time and part time students, including practicing engineers with students drawn from technology companies in the Tennessee Valley, home of the Redstone Arsenal and NASA's Marshall Space Flight Center. Come be a part of dynamic environment for learning and research in Industrial and Systems Engineering and Engineering Management.

Degree Programs:

- Master of Science in Engineering**
 - Engineering Management
 - Systems Engineering
 - Industrial Engineering and Quality
- Master of Science in Operations Research**
- Doctor of Philosophy**
 - Engineering Management
 - Systems Engineering
 - Industrial Engineering and Quality

Distinctions:

- Recognized as top EM Graduate program by ASEM in 2001 and 2004
- All programs are available via Distance Learning

Faculty:

- Phillip Farrington, PhD: Oklahoma State University — Lean Manufacturing, Systems Engineering, Quality Statistics
- Sampson Gholston, PhD: UAHuntsville, Quality and Statistics
- Sherri Messimer, PhD., Texas A&M, Manufacturing, Operations Research
- Gillian Nicholls, PhD., University of Pittsburgh, Engineering Economics, Engineering Management
- James Swain, PhD: Purdue University, Statistics, Simulation
- Dawn Utley, PhD: UAHuntsville, Engineering Management

UAHuntsville ISEEM Department
Dr. James Swain
Professor and Chair

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ISEEM Department Research Thrusts

Engineering Management

Engineering Management in Technology Organizations

Teaming and Team development

Understanding Mental models

One project involves working with supply chain teams to understand schedule risk mitigation in the context of types of conflict within the group and their propensity for team members to consider the team or group a success and want to remain a part of the team/group. Another is contrasting team/group behavior between telecommuting and non-telecommuting groups.

Systems Engineering

Tailoring Systems Engineering Process

Lifecycle Analysis

Elegance in Systems Design

Questions related to systems engineering lifecycle have included methods of parametric cost modeling and formulation with cost as an independent variable (CAIV) among other trade study methods, as well as consideration of "how much" systems engineering formalism is needed in a design. Elegant design has been proposed as a mechanism to provide effective, efficient, robust, and well-behaved systems.

Industrial Engineering

Quality and Six Sigma

Electronics manufacturing

Lean Manufacturing

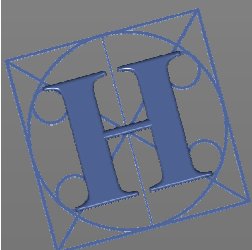
A recent dissertation developed an assessment tool to quantify the success of lean implementation in an organization using employee perception. Both factor analysis and structural equation modeling were used to develop the tool and employee's perception of lean implementation provided an alternative tool to assess Lean implementation that may provide a distinct but complementary view for organizations.

Operations Research

Discrete Event Simulation Modeling and Analysis

Heuristic optimization strategies

A recent thesis used distributed computing to perform simulated annealing to solve problems of simulation optimization. Another project involved cost modeling for depot level repair for military helicopters. A dissertation utilized evolutionary algorithms to perform multi-objective optimization to fine-tune transportation model aggregation.



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