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.
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.

Apply online for Graduate School:
http://grad.eng.uah.edu