The Master of Science in Industrial Engineering (M.S.I.E.), Master of Science in Systems and Engineering Management (M.S.S.E.M.), Master of Science in Manufacturing Systems and Engineering (M.S.M.S.E.), the Doctor of Philosophy in Industrial Engineering, and the Doctor of Philosophy in Systems and Engineering Management programs prepare competent industrial engineers and engineering managers for industry, consulting, university teaching and research.

Master's and Ph.D. programs incorporate courses taken in each of the five specialty areas below.

**Engineering Management:**
- Systems theory, decision theory, industrial cost analysis, advanced engineering economics, performance improvement in organizations, project management, and productivity management.

**Ergonomics and Human Factors Engineering:**
- Occupational biomechanics, work physiology, industrial ergonomics, environmental hygiene, cognitive engineering, human performance, human computer interaction, and occupational safety.

**Manufacturing and Quality Assurance:**
- Manufacturing engineering and design, computer integrated manufacturing/CAD/CAM, process analysis and economics, automated manufacturing and process planning, programmable control systems.

**Operations Research:**
- Simulation modeling, scheduling and sequencing, just-in-time production systems, inventory and production control, linear and nonlinear programming, network analysis, artificial intelligence and expert system.

**Statistics and Quality Assurance:**
- Design of experiments, statistical data analysis, reliability and maintainability, on-line and off-line quality assurance, and total quality assurance.

**DISTANCE PROGRAMS**
The Master of Science in Systems and Engineering Management (M.S.S.E.M.) and the Ph.D. in Systems and Engineering Management programs are offered both on campus and by distance education and are designed to prepare graduates for positions in technical management. Details regarding admission and degree requirements are available from the department.
Industrial Engineering Research
Faculty Research Specializations

Dr. Mario Beruvides, P.E.
AT&T Professor

Dr. James Smith, P.E., C.P.E.
Professor

Dr. Weilong Cong
Assistant Professor
Rotary ultrasonic machining of high performance materials, Renewable energy manufacturing, Traditional and nontraditional machining processes in semiconductor manufacturing, Additive manufacturing of metal and composite materials

Dr. Milton Smith, P.E.
Professor

Dr. Jennifer Cross
Associate Professor

Dr. Joseph Urban
Professor

Dr. Ismael Regis de Farias Jr.
Associate Professor
Operations Research, Optimization, Mixed-Integer Programming

Dr. Susan Urban
Professor
Distributed Data Management and Integration, Complex Event Processing, Integration of Event and Stream Processing, Distributed Rule and Transaction Processing, Active/Reactive Behavior in Distributed, Data-Centric Applications, Object-Oriented Data Modeling

Dr. Simon Hsiang, P.E., C.P.E.
E.L. Derr Professor
Human Factors/Ergonomics, Cognitive Engineering, Occupational Biomechanics, Virtual Reality, Modeling and System Design, Data Mining, System Identification, Human Safety and Reliability

Dr. Shiren Wang
Associate Professor
Design and Manufacturing of Multifunctional Nanocomposites, Synthesis, Processing and Characterization of Low-Dimensional Nanomaterials, Nanotechnology-Enabled Energy Conversion and Storage, Nanomanufacturing, Modeling and Simulation of Manufacturing Process

Dr. Timothy Matis
Associate Professor
Operations Research, Stochastic Processes, Queuing Theory, Ad-hoc Communication Networks, Conceptual Learning Theories and Virtual Learning Environments

Dr. Hong Zhang, P.E.
Interim Department Chair and Professor
Computer-Aided Manufacturing, CIM, CAPP, CAD/CAM, FMS, Knowledge Engineering and Expert Systems, Production Simulation, MRP I and II, Concurrent Engineering Design

Dr. Patrick Patterson, P.E., C.P.E.
Professor
Biomechanics, Physical Ergonomics, Cognitive Ergonomics, Computational Intelligence, Human-Computer Interaction, Rehabilitation Engineering

Dr. James Smith, P.E.
Professor

Dr. Joseph Urban
Professor

Dr. Ismael Regis de Farias Jr.
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