Industrial & Systems Engineering and Engineering Management

The ISEEM department offers specializations in Industrial engineering, Systems engineering, and Engineering management. It also offers students the opportunity without an engineering background to obtain quantitative tools in operations research. Our grad programs broaden engineering skills in problem-solving in areas of operations research, quality control, computer-integrated manufacturing, and simulation. It also offers expansion on systems-oriented aspects with a focus on needs identification, cost-benefit analysis, system life-cycle concept and more by providing students with the analysis and design tools. The Engineering management program is designed to build upon the mathematical and analytical expertise gained from both a formal engineering education and professional experience. It emphasizes the application of management functions and leadership principles in a technological setting while recognizing the basic and applied sciences in engineering systems.

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Degree Programs:

Master of Science in Engineering

- Industrial Engineering
- Systems Engineering
- Engineering Management

Master of Science

- Operations Research

Ph.D in Industrial Engineering

Research Labs & Industry Partnerships:

RESEARCH AREAS:

- Additive Manufacturing
- Model Based Systems Engineering
- Cyber-Physical Systems Integration
- Simulation Modeling and Analysis
- Complex Engineered Systems
- Systems Science
- Engineering Material System Design
- Supply Chain Management
- Lean Manufacturing
- Quality Systems Design and Engineering
- Large-Scale Complex Systems Design
- Gamification and Game Theory
- Technology Management
- Six Sigma

INDUSTRY PARTNERSHIPS:

- NASA
- U.S. Army
- Northrop Grumman
- Alabama Department of Transportation
- Steelcase
- Lockheed Martin
- Jacobs
- Sanmina/SCI
- Adtran
- Dynetics
- Aerojet Rocketdyne
- Davidson Technologies
- MITRE

ISEEM Department Research Thrusts

Engineering Management

Research Projects:

- Big Data Analytics
- Data Science
- Remote Sensing
- Deep Learning
- Interpretable Machine Learning
- Explainable Artificial Intelligence
- Human Machine Interfaces
- Human-AI Automation and Trust Factors
- Strategic Engineering Management
- Organizational Culture change

Complex Systems Integration Laboratory

Research Projects:

- ABEX (Alabama Burse Energetics eXplorer)
- New Capability Research for the Apache Project Office
- Energy-storage Research
- Nuclear Thermal Propulsion Modeling and Analysis
- MBSE Support for the Lynx X-Ray Surveyor
- Vertical Lift Consortium Project Support
- Space Launch Systems Core Stage Engine (RS-25) Affordability
- Model-Based Acquisition Process Prototype for Joint Multi-Role Technology Demonstrator

Mesmer Research Group

Research Projects:

- A Comprehensive Architecture Strategy for Mission Systems
- Category Theory for Systems Engineering
- Projects Factors
- Reexamining the Logical Foundation of Engineering Decision Making Under Uncertainty
- RS-25 Affordability Study
- Understanding the Value of Model-Based Systems Engineering