Rutgers School of Engineering’s doctoral degree in Industrial and Systems Engineering is a program for those looking to advance academic knowledge in areas that include systems engineering production and manufacturing engineering, quality and reliability engineering, energy, and transportation systems. The core competencies of the program are stochastic systems and optimization, reliability and quality, automation sciences, computation sciences, and advanced manufacturing. The breadth of applications encompasses manufacturing systems and engineering, intelligent transportation systems, energy systems, supply chain and logistics, aviation safety, and cyber-physical security. Active research in these areas by both faculty and graduate students includes publication in leading research journals and generates support from agencies including the National Science Foundation; the Departments of Commerce, Defense, Energy, and Transportation; the Federal Aviation Administration; New Jersey State agencies; and private industry.

Academics and Research

The department offers well-equipped laboratories that include Manufacturing Automation Research (precision machining, metal additive manufacturing); Laser-Assisted Micro-Manufacturing (micro-milling, laser micromachining, and pulsed laser processing); Quality and Reliability; Automation and Control; Advanced Simulation (smart city, cyber-physical manufacturing); Data Analytics, and Stochastic Systems.

Graduate students collaborate with faculty in other graduate programs, including statistics, mechanical engineering, materials science and engineering, mathematics, operations research, civil and environmental engineering, and management science. There are 13 full-time faculty members and approximately 60 students in the master’s program and 40 in the doctoral program. Twenty percent are U.S. students; 80 percent are studying full-time.

Core Engineering Qualifying Courses

- Deterministic Models in Industrial Engineering
- Stochastic Models in Industrial Engineering
- Production Analysis
- Systems Reliability Engineering

Advanced Courses

- Optimization
- Stochastic Systems
- Advanced Manufacturing
- Supply Chain and Logistics
- Data Analytics
- Reliability Engineering
- Production and Inventory
- Simulation
- Engineering Economics
- Risk Analysis
- Energy Systems

Doctoral Degree Requirements

- 48 credits, plus 24 credits of dissertation research
- Written qualifying exams
- Dissertation proposal and defense

Why Rutgers Industrial and Systems Engineering?

- Our vibrant academic community is committed to integrating education and research to achieve transformational innovation that is ethically responsible and sustainable.
- Our Industrial and Systems Engineering graduate program is ranked among the top 20 in the nation by U.S. News and World Report.
- Our students engage in relevant cutting-edge research.
- Our accomplished faculty members are experts in their fields of research.
- Our collaborative relationships across a variety of industries allow us to offer career support for students.

For application deadlines and more information, visit: ise.rutgers.edu/GraduatePrograms