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AUBURN UNIVERSITY

SAMUEL GINN
COLLEGE OF ENGINEERING

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Automotive Manufacturing Systems Graduate Program



Auburn University

Automotive Manufacturing Systems Graduate Program

The automotive industry continues to grow rapidly in the Southeast and consists of many firms from around the world involved with vehicle manufacturing, quality, logistics, design and planning. The automotive manufacturing systems graduate program at Auburn University is a certificate program designed for master's degree students in the Department of Industrial and Systems Engineering (ISE). Students may also complete the automotive manufacturing systems certificate program through the Master of Science or doctoral degree programs.

The graduate program:

- Enhances your ability to begin a career in the Southeast's growing automotive industry, as well as in the national or international arena
- Lets you take part in research and internship opportunities in automotive and related industries
- Builds professional credentials for advancement through tailored technical courses



ISE graduate students are required to hold a bachelor's degree or its equivalent from an accredited college or university. An engineering background is not required, and students with undergraduate degrees in mathematics, the sciences and business have successfully completed Auburn ISE graduate studies. Core courses, which all ISE graduate students must complete, assume certain background requirements, including:

- Calculus and linear equations (3-4 terms)
- Probability and statistics (2 terms)
- Deterministic and stochastic operations research (1 term)
- Engineering economics (1 term)

Curriculum Description

The ISE master's program is a 30-credit hour, nonthesis curriculum available both on campus and through outreach. The graduate degree requires five core courses, including the following three courses:

- INSY 6600 Manufacturing/Production Economics
- INSY 7300 Advanced Engineering Statistics I
- INSY 7420 Linear Programming and Network Flows

Plus, two of the following courses:

- INSY 7030 Manufacturing Systems
- INSY 7240 Production and Inventory Control
- INSY 7400 Simulation
- INSY 6010 Safety Engineering I or INSY 7060 Ergonomics I

Students may choose four of the remaining elective courses to complete the automotive manufacturing systems certificate:

INSY 6330 Data Decision Making Using Six Sigma

This course is designed to provide an overview of Six Sigma, Lean Six Sigma and Design for Six Sigma, as well as provide the tools and training necessary to pass ASQ's Green Belt exam. Students learn project definitions and the roles of team members, process mapping, cause and effect tools, measurement system analysis, capability analysis, graphical techniques, FMEA's, confidence intervals, hypothesis testing as it relates to Six Sigma, correlation and regression, DOE, concept of control, review SPC and the relationship between these tools and Six Sigma process improvement.

INSY 6800 Lean Manufacturing Systems

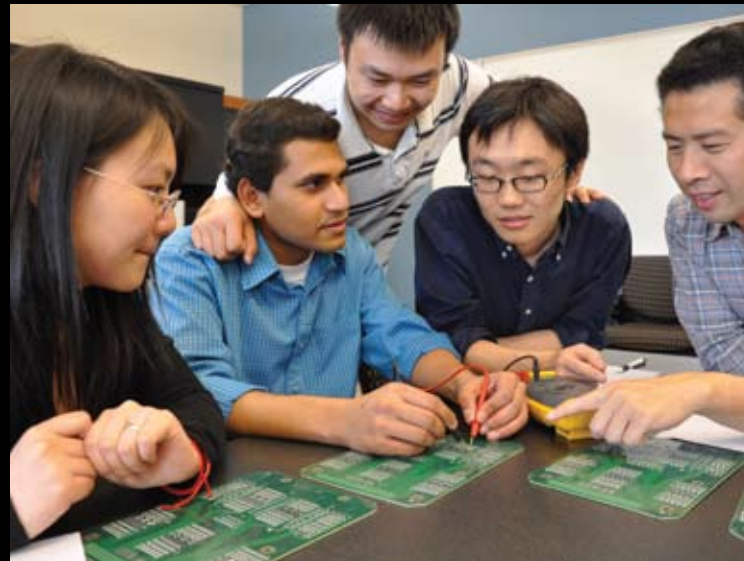
Lean manufacturing systems design and the methodology for designing lean production systems and manufacturing cells are examined in this course. The strategies explored are based on a new design for the factory called linked-cell manufacturing systems, which provide for a continuous flow or smooth movement of materials through the plant.

INSY 6830 Vehicle Technologies and Trends

Advances in automotive technology and the impact of future technologies on the design and manufacture of the automobile are investigated. In particular, this course covers vehicle design for alternative fuel vehicles, next generation vehicle body and interior design, telematic systems and technological advancements in drive train systems, including autonomous vehicles. The impact of these advancements on the automotive supply chain is also addressed.

INSY 6840 Control of Manufacturing Floors and Processes

Students work within teams to apply the principles of computer-aided manufacturing and the Toyota Production System (TPS) on the modern automated floor. NC controls, robots, programmable logic controllers (PLC), Kanban systems, DELMIA Catia and MasterCAM are sample topics.



INSY 6860 Automotive Manufacturing Systems

This course reviews the history of automotive manufacturing and the automotive manufacturing process for a typical automotive assembly plant. Issues associated with automotive suppliers are presented in relation to these processes, as well as supply chain management, globalization, product and process improvement, quality control and costs.



Career Opportunities

Students participating in the automotive manufacturing systems graduate program have become employed by companies such as Siemens, Honda, Lear, Harris and Hyundai.

Admissions Requirements and Processes

Admission to the ISE graduate program occurs on a rolling basis. Candidates must apply through the Auburn University Graduate School. Applications to the Graduate School can be completed online. All students must submit official transcripts and GRE scores. There are no set requirements for admission – GPA, previous degrees, standardized test scores, background and interests are all considered.

Outreach

The automotive manufacturing systems graduate program can be accomplished through the Graduate Outreach Program, though the timeframe will likely exceed two years. Students with a U.S. or APD address may participate in the outreach program. Class content is delivered through online streaming video or by DVD and is identical to traditional classroom settings.

Facilities

Modern, up-to-date facilities and state-of-the-art laboratories in manufacturing, metrology and vehicle electronics allow students to make the most of their experience in the classroom and lab. The Shelby Center for Engineering Technology is home to the Department of Industrial and Systems Engineering. This complex provides exceptional research labs, "smart" classrooms and auditoriums, as well as reconfigurable instructional laboratories in an environment that provides a sense of community and collaboration among faculty and students.