

MS in Manufacturing Systems Engineering

NTU is not accepting applications in Manufacturing Systems Engineering at this time while the curriculum is under review.

The competitiveness of a modern manufacturing firm requires an interdisciplinary viewpoint of its employees, one that can be gained through completion of NTU's MS in Manufacturing Systems Engineering. This degree program is designed to educate the engineers who will be most capable of contributing to the solution of the many broad problems in today's information-intensive manufacturing industries. The program's objective is to provide a graduate-level degree for engineers who will work in the design, implementation, operation, and management of modern, information-based manufacturing systems that serve as the genesis for manufactured products supporting virtually every aspect of the modern way of life. The students in this program learn technical skills that are typically not taught in undergraduate courses and management skills essential to keep industry moving in the right direction. Graduates will receive an interdisciplinary education that presents their employers an alternative to hiring engineers with specialized degrees for manufacturing-related positions.

Completion of the curriculum requires approximately one-and-a-half years of full-time graduate study. Part-time students enrolled through NTU should expect to fulfill the requirements in three to five years, depending on the course load they choose.

Admissions Requirements

NTU is currently not accepting applications to this program. The following information is intended for students admitted prior to November 2004.

Students must meet the following eligibility requirements for regular admission into the Manufacturing Systems Engineering program:

- BS degree in engineering from an ABET-accredited engineering program in the United States, or a CEAB-accredited program in Canada; or the equivalent from a foreign institution.
- Cumulative undergraduate G.P.A. of at least 2.9 on a 4.0 scale.

Students who do not meet these requirements may be granted provisional admission into the program, depending on academic background and experience. For additional information about provisional admission status, see the Admission section of this bulletin.

Curriculum Overview

Students must complete a minimum of 33 credits, including at least 18 core credits, nine specialization credits, and six elective credits.

Core Curriculum (18 credits)

Students must complete three required core courses in the following areas, as well as at least three additional courses from a broader list in the same areas:

- Design and Analysis of Manufactured Products
- Control of Manufacturing Processes and Systems
- Management of Manufacturing Processes and Systems

Students should complete the core courses prior to pursuing specialization and elective courses.

Specializations (9 credits)

Students must complete at least nine specialization credits, consisting of at least three additional courses from the core Manufacturing Systems Engineering areas.

Electives (6 credits)

Students select two additional courses from the NTU graduate catalog to meet the elective requirement and bring their total credits to a minimum of 33. Elective credits are designed to give students the opportunity to tailor the program to their individual and organizational goals and needs. Students are encouraged to consult with an NTU advisor to confirm they have the appropriate prerequisite knowledge.

Program of Study Plan

Admitted students should submit a Program of Study Plan (PSP) to NTU prior to completion of six semester credit hours. Failure to submit a PSP increases the possibility of students completing duplicate courses or courses that are not applicable to their degree programs. Although NTU cannot guarantee preferred course availability in any given term, the PSP documents do guide course selection from partner universities. It may be necessary for a student to revise an approved PSP when

course availability does not comply with the student's needs. The PSP form should be submitted through the NTU Web site.

The following course list illustrates the flexibility available to students who want to specialize in specific areas of Manufacturing Systems Engineering. Individual course descriptions may be found on the NTU Web site at www.ntu.edu. *Specific courses and course requirements may change. Updates will be posted on the NTU Web site.*

Core Courses (18 credits)

Required Courses

PD 525 Integrated Design and Manufacturing
SP 510 Modeling Manufacturing Systems
SP 560 Manufacturing Management Practices

Additional Courses

Three courses from any of the following:

Design and Analysis of Manufactured Products

PD 720 Materials and Manufacturing Considerations
in Design
PD 547 Nontraditional Manufacturing Processes

Control of Manufacturing Processes and Systems

PD 570 Computer Integrated Manufacturing Systems
SP 720 Advanced Production Control

Management of Manufacturing Processes and Systems

PD 522 Design for Manufacturability and Concurrent
Engineering
SP 565 Modern Manufacturing Methods and Systems

Specialization Courses (9 credits)

Three courses from any of the following:

Design and Analysis of Manufactured Products

IC 503 Microelectronic Packaging Materials
IC 730 Advanced Microelectronic Processing
ME 780 Advanced Mechanics of Materials
MS 715 Materials Microstructure

Control of Manufacturing Processes and Systems

CT 520 Feedback Control Systems
CT 570 Digital Control Systems
CT 780 Robotics
ME 523 Computer-Aided Analysis and Design of
Mechanical Systems

Management of Manufacturing Processes and Systems

MB 710 Introduction to Engineering Management
NB 710 Technology and Operations—Moore's Law
and Other Business Accelerators
SY 560 Systems Engineering Management
TO 750 Total Quality Management

Elective Courses (6 credits)

Any two additional graduate-level courses offered by NTU provided the student has the required prerequisite knowledge specified in the course descriptions.