



Engineering Online

@ NC STATE UNIVERSITY



Integrated Manufacturing Systems Engineering Online Degree Program

The Integrated Manufacturing Systems Engineering (IMSE) Institute was established in 1984. IMSE provides multidisciplinary graduate-level education and practical training opportunities in the theory and practice of integrated manufacturing systems engineering at the master's level. IMSE focuses on providing a manufacturing presence and a program environment in the College of Engineering where faculty, graduate students and industry can engage cooperatively in multidisciplinary graduate education, basic and applied research, and technology transfer in areas of common interest related to modern manufacturing systems technology. The objective of the IMSE program is to offer students with traditional discipline backgrounds in engineering and the physical sciences an opportunity to broaden their understanding of the multidisciplinary area of manufacturing systems. Core areas of concentration are offered in manufacturing systems, logistics, mechatronics, and biomanufacturing.

CHARACTERISTICS OF THE ONLINE PROGRAM

- Online courses are identical to on-campus courses in terms of content, requirements and academic rigor.
- On-campus class lectures are captured, digitized, and placed on the Internet for distance students to access at any time, from any location. Students must, however, closely follow the on-campus class schedule in terms of submitting assignments and taking exams.
- Course assignments, lecture notes, and handouts are made available to distance students on the course website.
- Students must have access to high speed Internet connections and have accessibility to an individual who can be approved to serve as a proctor for in-class exams.

ADMISSION REQUIREMENTS

- Bachelor's degree from an accredited college or university in an engineering discipline. An overall undergraduate GPA of at least 3.0. Original transcripts of all college or university work must be sent to the Graduate School.
- GRE scores are required but maybe waived for online students.

- TOEFL or IELTS scores (no more than two years old) for international applicants unless they have completed one year of study at a university in the U.S., Canada, or Great Britain.
- Three letters of recommendation from persons able to comment on the applicant's qualifications for graduate study.
- Completion of the online application at:
<http://www2.acs.ncsu.edu/grad/applygrad.htm>

DEGREE REQUIREMENTS

- Completion of 27 credit hours of graduate courses at the 500 or 700 level with an overall GPA of 3.0 in addition to a research project for 6 hours of credit.
- The general plan of study of the IMSE degree consists of three components: common core courses (5), concentration electives (4), and a research project.
- All degree requirements must be completed within six years and, except for summer sessions, a student must remain continuously registered for a minimum of one course per fall and spring semesters until graduation. A leave of absence can be granted for two semesters with reasonable justification.
- No thesis requirement.

PROGRAM REQUIREMENTS:

MANUFACTURING CORE (Select one from each Group)

Group 1:

CSC (ECE) 510 – Software Engineering
 CSC 742 – Data Management Systems
 ISE (CSC) 762 – Computer Simulation Techniques
 ISE (CSC) 441 – Introduction to Simulation
 ISE 719 – CIM System Design

Group 2:

ISE 510 – Applied Engineering Economy
 ISE 711 – Capital Investment Economic Analysis

Group 3:

ISE 716 – Automated Systems Engineering
 ISE 514 – Manufacturing Product Engineering
 ISE 715 – Manufacturing Process Engineering

Group 4:

ISE 723 – Production Planning – Scheduling and Inventory Control

Group 5:

MAE 534 – Mechatronics Design
 MAE 742 – Design for Mechanical Assembly

LOGISTICS CORE (Select one from each Group)

Group 1:

CSC (ECE) 510 – Software Engineering
CSC 742 – Database Management
ISE (CSC) 762 – Computer Simulation Techniques
ISE (CSC) 441 – Introduction to Simulation
ISE 719 – CIM Systems Design

Group 2:

ISE 510 – Applied Engineering Economy
ISE 711 – Capital Investment Economic Analysis

Group 3:

ISE 514 – Manufacturing Product Engineering
ISE 716 – Automated Systems Engineering

Group 4:

ISE 723 – Production Planning – Scheduling and Inventory Control

Group 5:

ISE 754 – Logistics Engineering

MECHATRONICS CORE (Select one from each Group)

Group 1:

ECE 556 – Mechatronics Design
MAE 534 – Mechatronic Design

Group 2:

MAE 513 – Principles of Structural Vibration
MAE 533 – Finite Element Method I
MAE 742 – Design for Mechanical Assembly

Group 3:

ECE (CSC) 460 – Digital Systems Interfacing
ECE 711 – Analog Electronics
ECE 713 – Digital Signal Processing

Group 4:

CSC (ECE) 517 – Object-Oriented Programming
ISE 716 – Automated Systems Engineering
ISE 719 – CIM System Design

Group 5:

ECE 437 – Distributed Real-Time Control Systems

BIOMANUFACTURING CORE (Select one from each Group)

Group 1:

ISE 719 – CIM System Design

ISE/CSC 762 – Computer Simulation Techniques

Group 2:

ISE 510 – Applied Engineering Economy

Group 3:

ISE 514 – Manufacturing Product Engineering

ISE 707 – Real Time Control of Automated Manufacturing

Group 4:

ISE 723 – Production Planning – Scheduling and Inventory Control

Group 5:

ISE 789 – Quality Control in Biomanufacturing Applications

TE 589B – Six Sigma Quality

COURSE REGISTRATION

- Visit *Engineering Online* at <http://EngineeringOnline.ncsu.edu> for a list of distance education courses available for each semester.
- Register through the *Registration* link.
- Full-time employed individuals can enroll in only two online courses per semester. It is highly recommended that new students enroll in only one online course during their first semester.

POST-BACCALAUREATE STUDIES

- Individuals may enroll in online credit courses prior to acceptance in a graduate degree program by enrolling as a Post-Baccalaureate Studies (PBS) student.
- Maximum of 12 PBS credit hours may apply toward the 33 credit hour degree requirement if the student earns the grade of B or higher in each course (and not a B-grade).

CONTACT INFORMATION

For more information about the Master's degree program in **Integrated Manufacturing Systems Engineering (IMSE)** available online, contact:

Dr. Steve Jackson, Director

IMSE Institute

Email: Steve_Jackson@imsei.ncsu.edu