

Department of Engineering Technology

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The department serves two basic roles. In the broader sense, it provides exposure to technology for general understanding and interpretation of industry founded in theory and practice. In a more practical sense, the department provides technology-based education that results in professional careers in industry. Career opportunities for graduates are in industry/business.

Research

The research interests of the Department of Engineering Technology are focused on technological systems and processes with specific industrial applications. This research represents the university's desire to effect the transfer of theoretical knowledge from the laboratory to the industrial sector (technology transfer).

Specific interests in mechanical engineering include green manufacturing, product design and development, quality assurance, composite materials, materials testing, production planning and management, manufacturing processes, computer-aided design (CAD), computer-aided manufacturing (CAM), computer numerical control (CNC), part programming, electromechanical design, robotics, liquid nitrogen automobile, nano-indentation, field emissions, corrosion and nano crystalline materials, and computer-integrated manufacturing (CIM). The principal research interests in electrical systems include hardware/software interfacing, data acquisition and analysis, computer-aided software engineering (CASE), local area networks (LANs), digital signal processing, real-time control systems,

distributed control systems, RF communication systems, biomedical optics, pulse oximetry, telemedicine, VLSI design of antenna array, SCADA systems, logic circuit design, applications of technology to education, and solar energy research. Also of interest are international projects involving the transfer of electronics technology to the academic and industrial sectors. The principal research interests in the construction engineering technology program include green building technology, building information management, innovative structural systems and building seismic hazard mitigation.

Support for research projects in the department has come from the National Science Foundation; American Society for Heating, Refrigeration and Air-conditioning Engineers; American Cancer Society; Cadence Design Systems Inc.; Texas Instruments Inc.; American Society for Engineering Education; Texas Department of Transportation; TU Electric; Electrical Generation Technology; Associated General Contractors of America; Society of Manufacturing Engineers and the U.S. Air Force. Industrial support of graduate student thesis research has been provided by MEMC Southwest, Aerospace Optics, TXU, Manamatsu Photonics, Bell Helicopter-Texttron, Texas Instruments, Halsey Engineering and Manufacturing, Molex Inc., Verizon, AT&T, Motorola, Montgomery KONE and Bateman Engineering.

Degree Program

The department offers a graduate program leading to the following degree:

- Master of Science with a major in engineering systems.

Admission Requirements

Admission to graduate study at UNT is described in the Admission section at the front of this catalog.

Applicants should hold an undergraduate degree in a technical field of study. Applicants not meeting this qualification may be admitted with a provision for removal of undergraduate deficiencies. In addition, applicants must meet departmental requirements for the Graduate Record Examination scores. Contact the department or the Toulouse School of Graduate Studies for information concerning competitive admission test scores.

Master of Science Degree Program

The program of study for the Master of Science with a major in engineering systems is a comprehensive program, yet provides for a degree of specialization with the proper selection of courses within the major. Two options are available.

Option 1, Master of Science, Thesis

The graduate credit requirement for the MS degree is 30 semester hours chosen in one of the following concentrations. A formal proposal and an oral defense of the thesis are required of all degree candidates.

Concentration in construction management

1. Required courses (18 credit hours): MGMT 5210 or MSES 5030 or MSES 5330; MSES 5020, MSES 5040, MSES 5060 and MSES 5950 (6 hours).
2. Technical courses: 6 credit hours selected from AECO 5050 (when taught as “Construction Dispute Avoidance and Resolution”); MSES 5200, MSES 5220 and MSES 5230.
3. Engineering Systems electives: 6 credit hours.

Concentration in electrical systems:

1. Required courses: MSES 5330 or MSES 5030; MSES 5020, MSES 5040, MSES 5060 and MSES 5950 (6 hours).
2. Technical core courses: 6 semester hours selected from the following: MSES 5300, MSES 5310, MSES 5320 or MSES 5340.
3. Engineering Systems electives: 6 credit hours.

Concentration in engineering management:

1. Required engineering courses: MSES 5020, MSES 5030, MSES 5040, MSES 5060 and MSES 5950 (6 hours).
2. Required management courses: ACCT 5020; MKTG 5150; and 1 course selected from the following: MGMT 5120, MGMT 5210, MGMT 5240, MGMT 5280, MGMT 5760 or MGMT 5850.
3. Engineering Systems electives: 3 credit hours.

Concentration in mechanical systems:

1. Required courses: MSES 5330 or MSES 5030; MSES 5020, MSES 5040, MSES 5060 and MSES 5950 (6 hours).
2. Technical core courses: 6 semester hours selected from the following: MSES 5100, MSES 5120, MSES 5130 or MSES 5150.
3. Engineering Systems electives: 6 credit hours.

Option 2, Master of Science, Non-Thesis

The graduate credit requirement for the MS degree is 33 semester hours chosen in one of the following concentrations. A project and/or examination is required of all degree candidates for the non-thesis option.

Concentration in construction management:

1. Required courses (15 credit hours): MGMT 5210 or MSES 5030 or MSES 5330; MSES 5020, MSES 5040, MSES 5060 and MSES 5930.

2. Technical courses: 6 credit hours selected from AECO 5050 (when taught as “Construction Dispute Avoidance and Resolution”); MSES 5200, MSES 5220 and MSES 5230.

3. Engineering Systems electives: 12 credit hours.

Concentration in electrical systems:

1. Required courses: MSES 5330 or MSES 5030; MSES 5020, MSES 5040, MSES 5060 and MSES 5930.
2. Technical courses: 6 semester hours selected from the following: MSES 5300, MSES 5310, MSES 5320 and MSES 5340.
3. Engineering Systems electives: 12 credit hours.

Concentration in engineering management:

1. Required engineering courses: MSES 5020, MSES 5030, MSES 5040, MSES 5060 and MSES 5930.
2. Required management courses: ACCT 5020; MKTG 5150; and 3 courses (9 credit hours) selected from the following: MGMT 5120, MGMT 5210, MGMT 5240, MGMT 5280, MGMT 5760 or MGMT 5850.
3. Engineering Systems electives: 3 credit hours.

Concentrations in mechanical systems:

1. Required courses: MSES 5330 or MSES 5030; MSES 5020, MSES 5040, MSES 5060 and MSES 5930.
2. Required technical core courses: 6 semester hours selected from the following: MSES 5100, MSES 5120, MSES 5130 or MSES 5150.
3. Engineering Systems electives: 12 credit hours.

Degree Plan

For advice regarding the procedure for obtaining a degree plan, which is to be submitted prior to the completion of 6 semester hours, see a graduate advisor in the departmental office, Discovery Park, Room F115.

Financial Support

The department has scholarships and research/teaching assistantships available for full-time graduate students. For additional information, make inquiries to a department graduate advisor.

Courses of Instruction

All Courses of Instruction are located in one section at the back of this catalog.

Course and Subject Guide

The “Course and Subject Guide,” found in the Courses of Instruction section of this book, serves as a table of contents and provides quick access to subject areas and prefixes.