



DEGREE REQUIREMENTS

The Doctor of Philosophy (Ph.D.) degree requires a minimum of 72 hours of graduate credit beyond the bachelor's degree, including coursework in major and minor areas of concentration together with credit for doctoral research and dissertation preparation. For students who have completed a Master's degree prior to joining the Ph.D. program, a minimum of 54 hours of additional graduate credit are required.

The Master of Science (M.S.) degree involves some depth of study in a specified area of concentration and requires a research thesis. A minimum of 30 hours, including 9 hours in a minor and 3-6 hours of thesis research, is required for this degree.

For a Master of IE degree, a minimum of 33 credit hours are required - at least 21 hours must be in Industrial and Systems Engineering. At least 27 hours of the 33 must be at the 500 level or above, and at least one 700 or 800 level ISE course must be included. 6 credit hours of project work for the degree is optional.

GRADUATE DEGREES

The Edward P. Fitts Department of Industrial and Systems Engineering is among the top 10 public programs in the nation (*US News*) and offers the following degrees: Doctor of Philosophy (Ph.D.), Master of Science (M.S.; thesis required) and Master of Industrial Engineering (M.I.E.; non-thesis). In addition, the department offers a dual MIE/MBA degree jointly with the Poole College of management.

GRADUATE RESEARCH

Advanced Manufacturing

- Additive Manufacturing
- Biomedical Manufacturing
- Micro/Nano-Scale Manufacturing
- Smart and Digital Manufacturing
- Systems Automation and Robotics

Health Systems Engineering

- Medical Decision Making
- Health Analytics
- Care Delivery Optimization
- Infectious Disease Modeling
- Clinical Operations Management
- Population Health and Public Health Policy
- Emergency Medical Systems and Public Health Preparedness
- Preventive Medicine
- Health Supply Chains
- Precision Medicine

Human-Systems Engineering

- Brain-Computer Interfaces
- Virtual and Augmented Reality
- Human-Machine System Design
- Performance Measurement Reality and Modeling
- Occupational and Systems Safety
- Biomechanical Modeling
- Neuroergonomics

Supply Chain and Logistics

- Just-in-Time Systems
- Humanitarian Logistics
- Facility Locations and Design
- Vehicle Routing and Scheduling
- Reliability and Quality Engineering
- Planning, Scheduling, and Inventory
- Production Systems Analysis Control and Design
- Logistics
- Information Systems
- Material Handling

Systems Analysis and Optimization

- Analytics
- Decision Analysis
- Modeling and Analysis of Deterministic and Stochastic Systems
- System Simulation
- Optimization
- Artificial Intelligence



RALEIGH, NORTH CAROLINA

Year after year, Raleigh, NC ranks among the five best places in the country to live and work. With moderate weather, it's only two hours from the beach and three hours from the mountains. Raleigh is both welcoming to families and individuals alike and is proud of its well-educated workforce and multi-cultural environment.

CENTERS, INSTITUTES & LABORATORIES

Advanced Manufacturing

- Center for Additive Manufacturing and Logistics
- Automation Laboratory
- Manufacturing Processes Laboratory
- Metrology Laboratory
- Micro/Nano-Manufacturing Laboratory
- Biomodeling Laboratory
- Engineering Living Tissue Systems Laboratory
- Medical Implants and Tissue Engineering Laboratory

Ergonomics and Human-Systems

- The Ergonomics Center of North Carolina
- Cognitive Engineering Laboratory
- Brain-Computer Interface Laboratory
- Virtual and Augmented-Reality Laboratory
- Biomechanics Laboratory

Health Systems

- Healthcare Engineering Laboratory

FACILITIES

The department has outstanding laboratories located in 111 Lampe Drive and collaborates closely with other engineering and non-engineering departments.

DISTANCE EDUCATION

Engineering Online at NC State is designed for working professionals. Courses are delivered directly to your home or workplace over the Internet. Engineering Online offers a full array of graduate courses for a non-thesis M.S. degree identical to those available on campus. For more information about Engineering Online, call 877.254.0058 or visit engineeringonline.ncsu.edu.

ADMISSIONS

Applications are accepted from undergraduate majors in engineering and in the behavioral, physical, and mathematical sciences. Applicants are expected to have a minimum 3.0/4.0 grade point average and Graduate Record Exam scores of 150 Verbal, 153 Quantitative and 3.0 Analytical. Minimum Test of English as a Foreign Language (TOEFL) scores are 80 for the Internet-based Test, 213 for the computer-based TOEFL and 550 for the paper-based test.

COST OF STUDY

Tuition and fees for full-time study in 2014-2015 are \$6,263 per semester for North Carolina residents and \$14,001 per semester for non-residents.

FINANCIAL AID

Graduate research and teaching assistantships are available with competitive stipends. All tuition and health insurance expenses are paid for students appointed as teaching or research assistants. The department also has fellowships available including the Fitts Fellowships.

APPLICATION DEADLINES

SPRING

- Nov. 25 - U.S. citizens and permanent residents
- July 15 - international applicants

SUMMER

- March 25 - U.S. citizens and permanent residents
- Dec. 15 - international applicants

FALL

- June 25 - U.S. citizens and permanent residents
- March 1 - international applicants

