

# Edward P. Fitts

## Department of Industrial and Systems Engineering

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Ranked in the top 10, the Edward P. Fitts Department of Industrial and Systems Engineering (ISE) offers an undergraduate program leading to a Bachelor of Science in Industrial Engineering and is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>.

### What is Industrial & System Engineering?

Industrial engineers are problem solvers! We analyze processes and ask “how can we make these processes faster, better, and cheaper?” ISEs play a pivotal role in end to end business operations from product development to product and service delivery. It is this holistic view that makes ISE unique. We rely heavily on gathering and evaluating data to help make decisions that are based on statistical and engineering methods. Here are some of the tasks that ISEs lead in industry today:

- Assess the feasibility of manufacturing a new product with existing technologies, resources, and capacity or develop new ways to make products including automation
- Create and monitor quality plans that ensure that faulty products will not be shipped to the customer.
- Determine improved methods of scheduling patients for surgery that decreases patient wait time and surgeon’s overtime.
- Model a retail chain’s inventory and supply chain methods to improve on-time deliveries.
- Develop computer simulation models to design and control large complex manufacturing, supply chain, or service delivery systems.
- Design controls in an airplane cockpit that are Human-centered.

As you can see ISEs enjoy the freedom to explore almost any industry. The career paths that you can take with ISE are virtually limitless! Discover more about a career in ISE! (<https://www.ise.ncsu.edu/what-is-industrial-engineering/#careers-in-ie>)

### Program Educational Objectives

The program educational objectives of the ISE department are to produce graduates capable of world-class performance in the following areas:

1. Applying the discipline’s body of knowledge to the design and management of systems, products and processes by optimizing performance with multiple constraints and conflicting objectives while evaluating the importance of time, cost, and quality.;
2. Leading and collaborating on teams in the workplace, while assessing the economic, societal, and ethical impacts and communicating effectively with all stakeholders; and
3. Adapting to changes in technology and our global society through continuous learning.

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### Curriculum

Throughout the curriculum students will develop a breadth of knowledge in all of the ISE focus areas resulting in a broad base of knowledge and skills. There is a pervasive thread throughout the curriculum on the measurement, design, and continuous improvement of production and service systems. The result is a data-driven, efficiency-focused engineer that is highly attractive in many industry segments. Our courses are designed to be hands-on whether that is in our state-of-the-art laboratories or using the latest software applications to solve real problems. The senior design capstone course is designed to give students an opportunity to apply what they have learned in the classroom to solve an industry-sponsored project. In addition to ISE courses, students take a wide variety of science, engineering, math, and statistics courses to form a well-rounded education.

### Admissions and Certification of Minor

The minor must be completed no later than the semester in which the student expects to graduate from his or her degree program. Paperwork for certification of the minor can be found online ([https://studentservices.ncsu.edu/forms/registrar/declare\\_minor.pdf](https://studentservices.ncsu.edu/forms/registrar/declare_minor.pdf)).

The form should be completed no later than during the registration period for the student’s final semester at NC State and submitted to Registration & Records for processing.

For more information contact:

Kanton Reynolds, Ph.D.  
[kreynolds@ncsu.edu](mailto:kreynolds@ncsu.edu)  
 919.515.0605

### Health Systems Engineering Certificate Program

This program is designed to provide you with a learning experience in preparation for a career in the healthcare field. After successful completion of the program, you will receive a Health Systems Engineering Certificate which sets you apart and makes you more marketable for a future career in the healthcare industry.

### Requirements

- A minimum GPA of 3.3
- Your resume (maximum of 2 pages)
- A brief statement of why you are interested in a career in healthcare (no more than 1 page, please)
- One ISE faculty recommendation
- An unofficial transcript
- All materials should be submitted to [healthsystems@ncsu.edu](mailto:healthsystems@ncsu.edu) by the deadlines listed below:
- Undergraduates – October 1st \* (Must be eligible to graduate by Spring semester of the following year)
- Graduate Students – December 20th

### Accelerated Baccalaureate/Masters (ABM) Program

This program will allow exceptional undergraduate students to complete both undergraduate and graduate degrees at an accelerated pace. The

student is allowed up to 12 credit hours to be counted towards both the undergraduate and graduate degrees.

For more information contact:

Kanton Reynolds, Ph.D.  
[kreynolds@ncsu.edu](mailto:kreynolds@ncsu.edu)  
919.515.0605

## Requirements

- Students must have completed a minimum of 75 credit hours and up to a maximum of 96 credit hours by the end of the current semester (includes transfer credits).
- Students must have earned a GPA of at least 3.5 overall with a 3.5 for all Industrial Engineering courses.
- Students must have satisfied all prerequisite requirements for 400 level courses.
- A letter of recommendation from the undergraduate teaching adviser identifying the applicant as a participant in the ABM program should accompany the application as well as the course numbers and titles of the 12 credit hours to be used for both the bachelor's and master's degree programs.

For more information about this department, including contact information, visit the department (<https://www.ise.ncsu.edu/>) website.

4221 Fitts-Woolard Hall  
919.515.2362

## Faculty

### Department Head

Julie Swann, *A. Doug Allison Distinguished Professor*

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## Directors

Maria Mayorga, *Goodnight Distinguished Chair in Operations Research and Director of Operation Research*

Kanton Reynolds, *Director of Undergraduate Programs*

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## Professors

Jingyan Dong

Shu-Cherng Fang, *Walter Clark Chair Professor and University Alumni Distinguished Graduate Professor*

Yahya Fathi

Ola Harrysson, *Edward P. Fitts Distinguished Professor*

Russell King, *Foscue Distinguished Professor and Director of Graduate Programs*

Yuan-Shin Lee

Louis Martin-Vega, *Dean Emeritus*

R. Shirwaiker

Rohan Shirwaiker, *Distinguished Professor, James T. Ryan Professor and University Faculty Scholar*

Reha Uzsoy, *Clifton A. Anderson Distinguished Professor*

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## Associate Professors

Karen Chen

Adolfo R. Escobedo

Xiaolei Fang

Leila Hajibabai

Michael Kay, *Director of IMSEI*

Yunan Liu

Osman Ozaltin

Hong Wan

Xu Xu

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## Assistant Professors

S Mohammad Hosseinian

Jordan Kern

Ben Rachunok

Sara Shashaani

Renran Tian

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## Associate Research Professors

Brandon McConnell, *Director of MEM*

Christopher Rock

Harvey West

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## Teaching Professor

Corey Kiassat

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## Teaching Associate Professors

S. Sebnem Ahiska King

Fred Livingston

## Teaching Assistant Professor

Nur Ozaltin

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## Professor of the Practice

Steven DelGrosso

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## Lecturers

Chris Irwin

Subramanian (Subbu) Pazhani

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## Adjunct Faculty

Chris Beal, *Adjunct Lecturer*

Lauren Marie Davis, *Adjunct Professor*

Ken Gregory, *Adjunct Lecturer*

Simon Hsiang, *Adjunct Professor*

Gigi Karmous-Edwards, *Adjunct Lecturer*

Dan Kempton, *Adjunct Lecturer*

Patrick Murray, *Adjunct Lecturer*

Binil Starly, *Adjunct Professor*

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## Emeritus Faculty

Paul Cohen, *Distinguished Professor*

Tom Culbreth Jr., *Professor*

Julie Ivy, *Distinguished Professor*

Thom Hodgson, *Professor*

Steve Jackson, *Teaching Professor*

Louis Martin-Vega, *Former Dean of Engineering*

Stephen Roberts, *Professor*

Ezat Sanii, *Associate Professor*

Clarence Smith Jr., *Senior Lecturer*

Javad Taheri, *Associate Research Professor*

Jim Wilson, *Professor*

Richard Wysk, *Professor*

Robert Young, *Professor*

## Plans

- Industrial Engineering (BS) (<http://catalog.ncsu.edu/undergraduate/engineering/industrial-systems/industrial-engineering-bs/>)
- Industrial Engineering (Minor) (<http://catalog.ncsu.edu/undergraduate/engineering/industrial-systems/industrial-engineering-minor/>)
- Supply Chain Engineering (Minor) (<http://catalog.ncsu.edu/undergraduate/engineering/industrial-systems/supply-chain-engineering-minor/>)