

## Prepare for a career using big data and models to guide risk-based decision-making.

Mitigating losses from extreme events, such as financial, public health, environmental, and climatological crises, is far more cost-effective than recovery, remediation, and reconstruction. While consideration of the risks to structures, systems, the environment, and human life has long been a key responsibility for practicing engineers, undergraduate students typically encounter topics related to risk either superficially or out of context. Analysis and management of such risks requires knowledge of the economic, policy, and societal context, in addition to the technical and mathematical foundations. Fostering this combination of disciplinary knowledge, methodological expertise, and interdisciplinary capability is the intention of Duke's Graduate Programs in Risk and Resilience Engineering.



### Master of Engineering (MEng) in Risk Engineering

Duke's Master of Engineering (MEng) in Risk Engineering emphasizes a systems approach, the use of decision analysis, and the leveraging of large data sets to assess the risk of extreme events and the costs and benefits of their consequences. Graduates from this program will be prepared to enter the workforce in sectors as varied as engineering and business consulting, insurance and finance, environmental risk assessment, and infrastructure engineering.

### MS & PhD Study Tracks in Systems, Risk, & Decisions

The study track in "Systems, Risk, and Decisions" for the MS and PhD degrees in Civil and Environmental Engineering provides students with specialized training in risk assessment, the analysis of hazard mitigation technologies, and the design of resilient systems while deepening students' expertise in one or more engineering disciplines. The track includes courses in mathematical modeling, optimization, risk assessment, and decision theory, as well as courses that explicitly integrate methods and applications.

## WHY CHOOSE DUKE?

- A thriving interdisciplinary environment with flexibility in choosing your coursework
- Intensive and personalized research opportunities
- Outstanding financial support for both PhD and master's students
- A welcoming, inclusive, and close-knit community in a terrific location
- Ranked #11 in the world and #6 in the U.S. in environmental science and engineering (*Academic Ranking of World Universities*).

### Concentration Areas

- Environment & Population Health
- Materials & Structures
- Energy & Climate Systems

### Master's Student Benefits

- Funding support for competitive applicants—typical scholarships range from \$20,000-\$30,000
- Dedicated career services
- Internship opportunities with startups and industry partners

### PhD Student Benefits

- 100% financial support for the duration of your studies, plus conference and travel support
- Direct admission to a research group
- PhD Plus, our innovative professional development program

Learn more:  
[cee.duke.edu/grad](http://cee.duke.edu/grad)

## How will Duke's degrees in Risk Engineering differentiate you in your career?

- Expertise in probabilistic modeling, data analysis, risk assessment, and decision-making under uncertainty is critically important to a broad range of academic, industrial, and governmental career paths.
- Engineering positions in model-based risk assessment increasingly require master's- or doctoral-level training.
- Graduates will be well-prepared to work in a wide variety of fields including risk assessment, engineering and business consulting, the insurance and re-insurance industry, financial engineering, operations research, and infrastructure analysis.

## Who should consider applying?

### MEng

Practicing engineers and scientists with backgrounds in civil, environmental, or another branch of engineering who wish to earn a master's degree providing them with expertise in risk analysis, added competence in an engineering specialty, proficiency in risk policy, economics, or law, and advanced leadership and management skills.

Undergraduates in engineering (or a related mathematical or physical sciences with appropriate catch-up courses) who wish to obtain a non-thesis master's degree in preparation for professional work in risk-related fields.

### MS

Undergraduates or early career professionals who wish to obtain a non-thesis master's degree as a first step towards subsequent graduate study in areas such as systems engineering, risk assessment, financial engineering, operations research, or infrastructure engineering.

### PhD

Undergraduates with previous research experience, master's students or professionals who wish to pursue advanced study in risk assessment, decision theory, uncertainty analysis, and systems modeling, as applied to problems in the environment, health, materials and structures, or energy and the climate system.

## Application Deadlines

**PhD Deadline:** December 15

**MS Deadline:** December 31

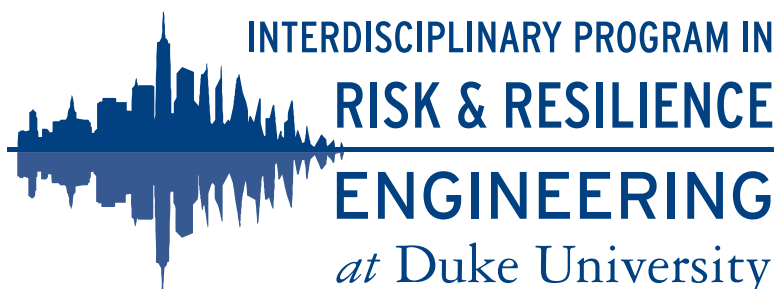
### MEng Deadlines:

#### Fall Entry:

- January 15 (Round 1/all applicants)
- March 15 (Round 2/all applicants)
- June 1 (Round 3/U.S. citizens & permanent residents)

#### Spring Entry:

- September 1 (Round 1/all applicants)
- November 1 (Round 2/U.S. citizens & permanent residents)



## LEARN FROM LEADERS IN THE FIELD



### Mark Borsuk, PhD Program Director

Dr. Borsuk's research interests include mathematical models for integrating scientific information on natural, technical, and social systems; Bayesian network modeling; and novel approaches to climate change assessment, combining risk analysis, game theory, and agent-based modelling.



### Henri Gavin, PhD

Dr. Gavin's interests include structural dynamics, earthquake engineering, seismic hazard mitigation for building contents, nonlinear dynamics, system identification, and optimal control with application to systems with controllable damping.



### Johann Guilleminot, PhD

Dr. Guilleminot's research focuses on uncertainty quantification, computational mechanics, and materials science, as well as on topics at the interface between these fields.

## EMAIL US

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