

NJIT

New Jersey's Science &
Technology University

THE EDGE IN KNOWLEDGE

The Master of Science Program in Critical Infrastructure Systems



New Jersey Institute of Technology

WHY STUDY CRITICAL INFRASTRUCTURE SYSTEMS?

Critical infrastructure represents one of the great technical challenges of the 21st century. The recent hurricane disasters along the Gulf Coast have underscored the critical role of infrastructure systems including the complex network of highways, bridges, tunnels, airports, seaports, railroads, public buildings, flood control structures, water supply, power grid, computer and communications systems, energy commodities networks, and waste disposal systems. The certainty of future extreme events demands skilled resources and intelligent investment to create a robust and sustainable infrastructure that is resilient against multiple hazards and to build operational, systems and programmatic capabilities for detection, protection, prevention, mitigation and response.

WHY STUDY CRITICAL INFRASTRUCTURE SYSTEMS AT NJIT?

The MS in Critical Infrastructure Systems is a unique multidisciplinary program that draws upon the full resources of New Jersey's Science and Technology University with course offerings from architecture, civil engineering, industrial engineering, electrical and computer engineering, engineering management, information systems and management. Courses in public health are also available in collaboration with the University of Medicine and Dentistry of New Jersey. The program covers all engineered public and private sector infrastructure (civil and engineered systems including buildings/urban development, transportation (highways/tunnels/bridges/airports), power plants/systems, environmental (water/wastewater/ecological), telecommunications, computer networks and cyber infrastructure), banking and finance, and public health infrastructure management.

WHAT DOES THE PROGRAM COVER?

The MS in Critical Infrastructure Systems is an integrated approach to critical infrastructure and emergency management covering major infrastructure sectors from two complementary and synergistic perspectives:

- Critical Infrastructure Life-cycle Management, including sector-based and cross-sector life-cycle asset management, maintainability and safety engineering, vulnerability analysis, hazard/crisis impact analysis and mitigation, infrastructure inter-dependencies, rehabilitation technologies, problem detection and process propagation, and program management.
- Critical Infrastructure Security and Emergency Management, including emergency information systems, emergency management, public health preparedness, enabling and protective technologies with applications to homeland security and critical infrastructure.

WHAT COURSES ARE AVAILABLE?

Core Courses

CE 671	Critical Infrastructure I: Performance and Risk Analysis of Infrastructure Systems
CE 672	Critical Infrastructure II: Security Management of Critical Infrastructure
EN 602	Management Science
ARCH 675	Elements of Infrastructure Planning

WHAT AREAS OF CONCENTRATION ARE AVAILABLE?

- Planning and Facilities Management
- Engineered Systems
- Public Health Systems (jointly with UMDNJ)
- Program/Impact Management
- Emergency and Preparedness (jointly with UMDNJ)
- Enabling Systems and Technologies

WHAT ELECTIVES ARE AVAILABLE?

Students can choose from an extensive list of electives in each of the areas of concentration, including:

- Infrastructure Planning in Practice
- Geographic Information Systems
- Facilities Management

- Maintainability Engineering
- Advanced Remote Sensing
- Infrastructure & Facilities Remediation
- Network Management and Security
- Principles of Emergency Management
- Public Health Preparedness I: Agents of Mass Injury or Destruction
- Public Health Preparedness II: Emergency Management and Response
- Health Communications/Risk Communications
- Design of Emergency Management Information Systems
- Improvisation in Emergency Management
- Command and Control Systems
- Data Mining & Analysis
- Knowledge Management
- Pattern Recognition and Applications
- Queueing Approach to Performance Analysis
- Project Planning and Control
- Industrial Simulation
- Engineering Reliability
- Safety Engineering Methods
- Environmental Impact Analysis

IS PART TIME STUDY AVAILABLE?

Evening and weekend courses accommodate the working professional, who may pursue the degree part time.

ARE THERE OPPORTUNITIES TO PARTICIPATE IN RESEARCH?

The Department of Civil and Environmental Engineering has an extensive research program with focal areas including critical infrastructure, transportation, environmental engineering, geospatial engineering, and construction engineering and management. The Infrastructure Planning program at New Jersey School of Architecture encourages student participation in a wide range of real-world projects including recent efforts in rebuilding and restoring New Orleans and the Paterson Research Initiative.

IS FINANCIAL AID AVAILABLE?

Financial support for full-time students in the MS program is extremely limited. For more information, visit www.njit.edu/financialaid/graduate/index.php

FOR FURTHER INFORMATION

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TO APPLY:

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