Department of Civil Engineering

Course Name:

Infrastructure Risk and Resilience

Course Number: 20-163	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

This course aims to teach the concepts of risk and resilience in infrastructure systems, along with their characteristics such as robustness, agility, proficiency, and redundancy. Upon completing the course, students will be able to understand the growing body of literature in the fields of infrastructure risk and resilience and evaluate the risk and resilience of real-world infrastructure systems.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: Resilience-based Engineering
- Chapter 3: Quantifying Robustness through Risk Analysis
- Chapter 4: Proficiency using Bayesian Networks
- Chapter 5: Recovery Analysis through Simulation

References:

- Cimellaro, G. P. (2016). Urban resilience for emergency response and recovery. Springer International Publishing, Switzerland.
- FEMA (2012). Seismic Performance Assessment of Buildings. FEMA P-58, Federal Emergency Management Agency, Washington, DC.
- FEMA-NIBS (2012). Earthquake Loss Estimation Methodology, HAZUS Technical Manual. Federal Emergency Management Agency and National Institute of Building Sciences, Washington, DC.
- ATC (1985). Earthquake Damage Evaluation for California. ATC-13, Applied Technology Council, Redwood City, CA.
- Various articles in top probabilistic journals.