

CE 594YX: Engineering for Disaster & Climate Resilience

Course Description:

The course is intended to provide engineering and non-engineering students with inter-disciplinary approaches to principles of engineering and planning for hazard risk reduction and climate change adaptation nationally and globally.

Focus will be on the application of engineering in communities exposed or prone to disasters and climate change, humanitarian response, and development.

Course Objectives

- Students will learn methods to engage with marginalized communities on addressing complex and uncertain problems using systems thinking, inter-disciplinary approaches, partnerships and policy. Methods include:
 - Systems dynamics
 - Social network analysis
 - agent-based simulation
 - GIS
 - Hazus
 - Ethnography

Course Topics

- Traditional phases of disaster management
- Resilience theories and practices
- Vulnerability and risk assessments for disasters and climate change
- System-of-systems design problems for civil infrastructure systems
- Project and construction management tools
- Disaster estimation loss methods
- Exploration of current policy trends in areas of disaster and climate change resilience