



UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
DIPARTIMENTO DI STRUTTURE PER L'INGEGNERIA E L'ARCHITETTURA
Dottorato in Ingegneria Strutturale, Geotecnica e Rischio Sismico

PROPOSTA SEMINARIO – OFFERTA FORMATIVA 2026

Titolo del seminario	Modeling of storm surge and some financial implications
Docente proponente	Prof. Alessandro Contento College of Civil Engineering, Fuzhou University, Fuzhou, China
Argomenti trattati / Descrizione sintetica	<p>In recent decades, the devastating impacts of tropical storms have underscored the growing vulnerability of many coastal regions worldwide, a concern amplified by climate change and the continued expansion of coastal communities. Effective risk analysis must jointly consider wind, rainfall, and storm surge, while relying on models that remain computationally efficient and capable of incorporating future climate conditions. Although suitable approaches exist for wind and rainfall, storm-surge models that can account for climate change are often either computationally demanding or based on empirical formulations with limited physical grounding.</p> <p>This seminar presents a novel physics-inspired probabilistic formulation for storm-surge and inundation prediction. The approach combines a logistic model to estimate the probability of flooding with a random-field model that characterizes surge depths at wet locations. The formulation captures essential physical mechanisms, integrates both simulated and historical data, and remains computationally efficient—enabling comparative analyses across multiple climate-change scenarios and extension to neighboring regions with minimal recalibration. Moreover, the random-field component preserves spatial correlation and supports predictions at unobserved inland or coastal points.</p> <p>The seminar will illustrate the formulation through representative applications, highlighting its potential as a scalable and practical tool for assessing tropical-storm risk in a changing climate.</p>
Data o periodo previsto	11 February 2026
Numero di ore totali	1 ora
CFU proposti	-
Modalità di erogazione	Il docente presenterà in presenza, trasmettendo in modalità blended.