

FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM

Visit to University of Notre Dame: April 4, 2024



This report summarizes the visit of **Dr. Sissy Nikolaou** from the National Institute of Standards and Technology that took place at the University of Notre Dame on April 4, 2024.

ITINERARY OR AGENDA

Itinerary for day of visit:

TIME:	ACTIVITY:
9:45 AM – 10:30 AM	Meeting with faculty member
10:30 AM – 11:00 AM	Meeting with faculty member
11:00 AM – 12:00 PM	First guest lecture by Visiting Professional. Lecture give to university's Society of Women Engineer's graduate group.
12:00 PM – 1:30 PM	Lunch
1:30 PM – 2:30 PM	Primary guest lecture by Visiting Professional
2:30 PM – 3:00 PM	Break
3:00 PM – 4:00 PM	Informal meeting with graduate students where they present, share and discuss research projects to get insight and feedback from visiting professional.

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S):

- Christopher Irwin, President, cirwin3@nd.edu
- Rachel Hamburger, Vice President, rhambur2@nd.edu
- WoongHee Jung, Member, wjung2@nd.edu
- Parisa Toofani Movaghar, Member, ptoofaniu@nd.edu
- Dr. Alexandros Taflanidis, Faculty advisor, a.taflanidis@nd.edu

VISITING PROFESSIONAL LECTURE OVERVIEW

Briefly describe the Visiting Professional's presentation, and attendee response. Include photos if applicable.

Lecture Abstract

The performance of lifeline infrastructure and buildings, as well as their functionality after a natural hazard event depend on multiple factors, including the original design and the current condition and capacity of the structure or infrastructure and network to resist the risks posed by hazards. Rapid recovery or uninterrupted operation can minimize disruptions and downtime, decrease costs associated with repair and rebuilding, and lessen the overall economic burdens on communities and individuals impacted by natural hazards. Given the age, condition, and original design of infrastructure systems across a community, the built environment may not perform well during natural hazard events. During this presentation, the speaker will discuss frameworks and tools developed by research of the National Institute of Standards and Technology to enhance the practice of

functional recovery for buildings and several infrastructure systems, including transportation highway networks. The background, methods, and latest developments on this topic will be discussed, with emphasis on the seismic hazard and thoughts on how these can be used to enhance the practice of design and analysis against extreme events. An example of a case study using a decision support tool developed by NIST that can influence investment planning to enhance seismic performance and recovery time of highway networks, including climate change considerations will be presented.

Professional Bio

Dr. Sissy Nikolaou is the earthquake engineering group leader for the Materials and Structural Systems Division at the National Institute of Standards and Technology in Gaithersburg, MD. She is also the president of ASCE's Geo-Institute 2023. With more than 25 years of worldwide experience, her work includes performance and resilience-based design, soil-structure interaction, seismic and geohazard analysis, multihazard risk assessments, and development of emergency and action preparedness plans.

Dr. Nikolaou earned her 5-year Civil Engineering Diploma from the National Technical University of Athens in Greece on Structural Engineering, and her M.Sc. and Ph.D. degrees from the University of Buffalo with a focus on Earthquake and Geotechnical Engineering.

SUPPLEMENTAL ACTIVITIES

Diversity, Inclusion, Innovation Lecture

Dr. Nikolaou presented to Notre Dame's graduate student chapter of the Society of Women Engineers regarding diversity, inclusion, and innovation. She discussed her experiences as a civil engineer as a student and as a professional. The presentation and subsequent discussion involved navigating the engineering landscape as a minority in the field, professional development, among other topics.

Managing Your Geotechnical Engineering Career Trajectory

DIVERSITY, INCLUSION, INNOVATION

NATIONAL ACADEMIES Sciences Engineering Medicine

Sissy Nikolaou, PhD, PE, D.GE, F.ASCE

April 27, 2-3 pm ET

COGGE WEBINAR SERIES

Functional Recovery Lecture

Dr. Nikolaou presented on the background, current state, and future of functional recovery for infrastructure systems, with a focus on highway networks, as described above. The presentation was attended by graduate students, undergraduate students, and faculty members.

Student Presentations

During this informal meeting, three graduate students presented on our work to share with Dr. Nikolaou our research areas and interests. This session was attended only by EERI members. The three presentations were entitled:

- Adaptive Multi-Fidelity Monte Carlo for Real-Time Storm Surge Hazard Predictions
- Accelerating Learning Across the Disaster Data to Knowledge Life Cycle: A Case Study in Hurricane-Exposed Communities
- Evaluating the Influence of Seismic Mitigation Measures on the Performance of Chilean Bridges

Dr. Nikolaou was eager to learn about our work and we were interested to receive her insights.

RESULTS, FEEDBACK AND LESSONS LEARNED

Dr. Nikolaou visited Notre Dame remotely. All meetings and presentations took place via Zoom.

ACKNOWLEDGEMENTS

The University of Notre Dame EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Dr. Sissy Nikolaou through their Friedman Family Visiting Professional Program endowment.

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above.



UNIVERSITY OF
NOTRE DAME

College of Engineering



The Earthquake Engineering Research Institute (*EERI*) and the Friedman Family Visiting Professionals Program present the 2024 seminar:

Functional Recovery: The New Frontier for Better-than-Code Seismic and Multi-Hazard Design

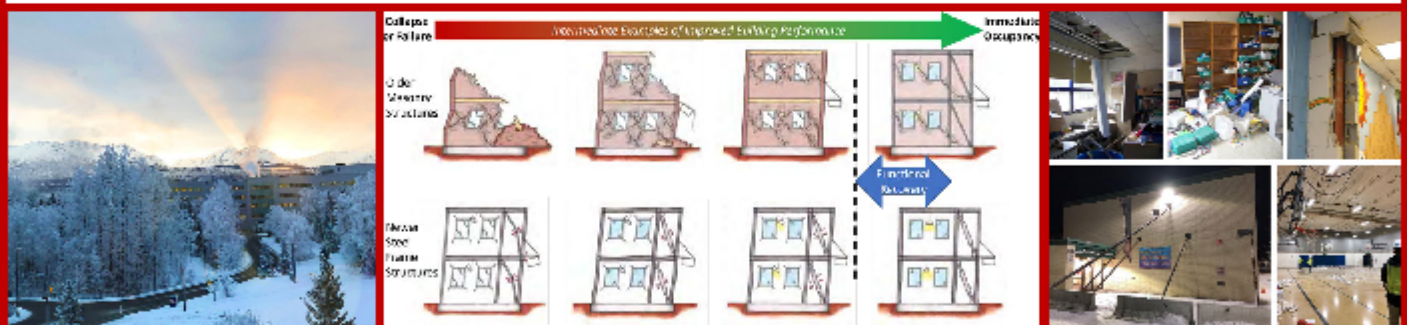
Thursday April 4th @ 1:30-2:30pm via Zoom

by Dr. Sissy Nikolaou

Leader of the Materials & Structural Systems Division at NIST

Zoom link: <https://notredame.zoom.us/j/92626865943>

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Dr. Sissy Nikolaou, PhD PE D.GE F.ASCE

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Earthquake Engineering Group Leader

Materials and Structural Systems Division, Engineering Laboratory

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