

# FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM



## Visit to University of Massachusetts, Amherst: April 22, 2021

This report summarizes the visit of **Dr Nathan Gould** from ABS Group that took place at the University of Massachusetts, Amherst on April 22, 2021

### ITINERARY OR AGENDA

TIME:	ACTIVITY:
11:30 AM – 12:00 PM	Student Chapter leadership and advisor meet & welcome Dr Gould to virtual FFVP event
12:00 PM – 1:00 PM	Meeting with SDC team and EERI chapter. The SDC team presented and discussed their recent design submission to the seismic design challenge to get insights and feedback from visiting professional. This was followed by a discussion on careers for undergraduates in the industry
1:00 PM – 2:00 PM	Virtual tour of structural engineering labs along with presentations from current graduate student researchers and post doctorates on the various research projects being undertaken by the Structural Engineering and Mechanics program. This was followed by a discussion on graduate careers in the industry
12:00 PM – 1:00 PM	Lunch
2:30 PM – 3:30 PM	Guest lecture by Dr Gould on "Enhanced seismic design integrated into a multi-hazard design approach"
3:45 PM – 4:30 PM	Information session on post-earthquake reconnaissance missions at Christchurch and EERI by Dr Gould
4:30 PM – 5:00 PM	Wrap-up meeting with EERI leadership and chapter advisor to discuss the event and thank Dr Gould

### STUDENT CHAPTER VISIT PLANNING COMMITTEE

**LEAD ORGANIZER(S):** {enter name of student members who lead the visit, chapter role, email}

- Divyansh Kapoor, Chapter President, [dkapoor@umass.edu](mailto:dkapoor@umass.edu)
- Hernan Castaneda, Chapter Vice President, [hcastaneda@umass.edu](mailto:hcastaneda@umass.edu)
- Dr Scott Civjan, Faculty Advisor, [civjan@ecs.umass.edu](mailto:civjan@ecs.umass.edu)
- Fiona O'Donnell, Past Chapter President, [fodonnell@umass.edu](mailto:fodonnell@umass.edu)
- Rhyann Sullivan, Past Chapter Vice President, [rhyansulliva@umass.edu](mailto:rhyansulliva@umass.edu)

### VISITING PROFESSIONAL LECTURE OVERVIEW

Dr Gould presented his lecture on the state of the art procedure and industry practice on incorporating seismic risk in a multi-hazard design approach. The presentation provided detailed background into seismic and other hazards such as blast loading that are critical for the design of structures that perform above the code minimum requirements. He also discussed non-technical challenges such as educating the client and all of these concepts were further illustrated via a case study on the recently designed emergency communications facility.

## Lecture Abstract

Multi-Hazard design, which incorporates both natural and manmade hazards, has become a popular design requirement for critical structures. While many Owners and various project team members anticipate a relatively straightforward integration of the respective hazards based on their understanding of the loads generated by the hazards, numerous complexities arise during the actual integration of a multi-hazard design approach into construction documents.

A case study of a recently designed emergency communications facility will be reviewed to understand the development of the design criteria and integration of the different conventional and extreme load criteria into a cohesive multi-hazard strategy to provide a higher level of protection for both structural and non-structural elements that are deemed to be critical to the post-event operations of the facility. Specific design features such as enhanced vertical and lateral load paths, and attachments of critical non-structural elements will be examined to illustrate the implementation of a multi-hazard strategy in the actual structure.

## Professional Bio

Dr. Nathan Gould is a Director in the ABS Group's Extreme Loads and Structural Risk Division. He is a practicing structural engineer with over 28 years of experience in the design, construction and rehabilitation of major structures in all regions of the United States. Dr. Gould is active in the utilization of performance based seismic design criteria and methodology for the design of new buildings and the retrofit of existing structures.

Dr. Gould is the author of numerous technical papers including recent articles on Performance Based Seismic Design, Progressive Collapse of Structures, Managing Extreme Wind Losses, and Terrorism Risk. He has served on several technical committees and organizations related to seismic analysis and design, including the NEHRP Advisory Committee on Earthquake Hazards reduction. He has been a member of several post-earthquake reconnaissance groups, including teams that investigated damage following the 2010 Haitian and 2011 Christchurch events. Dr. Gould is a licensed Professional and Structural Engineer in several states.

## SUPPLEMENTAL ACTIVITIES

### Meeting with the undergraduate Seismic Design Team

This year's undergraduate seismic design team presented and shared their experience with the Friedman Family visiting Professional, Dr Nathan Gould, and other attendees on their design for this year's competition submission. This was accompanied by a technical discussion of the design.

Following this, Dr Nathan Gould, took questions and shared his insights about undergraduate careers in the industry. This event was attended by the UMass EERI Chapter, undergraduate design team, and faculty advisor.

### Virtual structural engineering laboratory tours

Current graduate student researchers and post-doctorate students presented on current research projects being undertaken at the structural engineering testing facilities at UMass Amherst. This was accompanied by technical discussions on the projects and a virtual tour of the facilities.

Following this, Dr Nathan Gould, took questions and shared his insights about careers in the industry. This event was attended by current and former SEM graduate students.

## Post-earthquake reconnaissance and EERI information session

Dr Nathan Gould shared his experiences as a member of the post-earthquake reconnaissance missions in Christchurch, New Zealand in addition to his involvement and experiences with EERI.

This event was attended by current and former graduate students, undergraduate students, and members of the SEM faculty.

## RESULTS, FEEDBACK AND LESSONS LEARNED

One of the challenges was to create different virtual activities. It is not easy to be connected online for a long time. One recommendation for the future is to keep a maximum of two virtual activities during the day. In addition, trying to get people interested to join the different activities during that day was a challenge. In the future, it will be more efficient to get people joining by increasing the advertising in different classes.

## ACKNOWLEDGEMENTS

The University of Massachusetts, Amherst EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the event of Dr Nathan Gould 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. A list of the attachments is included below:

- Item 1, Schedule of events
- Item 2, Flier – Seismic design competition team information session
- Item 3, Flier – Structural Laboratories, Virtual tours
- Item 4, Flier – FFVP Talk
- Item 5, Flier – Post-earthquake reconnaissance and EERI information session



## 2020-2021 Friedman Family Visiting Professionals Program

Organized by the EERI/UMass Student Chapter and the Seismic Design Team

Time	Event
12:00 PM	Meeting with SDC team and career information session for undergraduate students
1:00 PM	Structural laboratories virtual tour and career information session for graduate students
2:30 PM	FFVP Talk and Q&A Session
3:40 PM	Post-earthquake reconnaissance session - Christchurch 2011

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## Seismic Design Competition

Organized by the EERI/UMass Student Chapter and the Seismic Design Team

Join the UMass Amherst Seismic Design team that annually designs and builds a 6 feet balsa wood scale model of a skyscraper for the EERI Seismic Design Competition. The concept of the competition involves the designing of a tower that can withstand seismic loading taken from actual earthquakes! We design and test our structure using SAP 2000 to simulate how the structure will behave in the competition on a shake table.

The competition takes place in different US States and involves a written component, a formal oral presentation, and aesthetic judging. This year, the competition was fully virtual with more extensive written portions and analysis of our structural model for seismicity, as well as accompanying seismic retrofit and geotechnical aspects of the site. Following the presentation, Dr Nathan Gould, our this year's EERI Friedman Family visiting professional will take questions and share his insights about careers in the industry. Undergraduates are encouraged to attend!

**Zoom link for event -** <https://umass-amherst.zoom.us/j/94345041652>



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## STRUCTURAL LABORATORIES “VIRTUAL TOUR”

Organized by the EERI/UMass Student Chapter

Join us for a “*Virtual Tour*” of the structural engineering laboratories at UMass Amherst to learn more about our current testing capabilities and some of the experimental projects being undertaken by our Graduate students. Additionally, our this years EERI Friedman Family Visiting Professional, Dr Nathan Gould, will spend some time after, taking questions and sharing his insights about careers in the industry.

**Zoom link for event -**

<https://umass-amherst.zoom.us/j/94345041652>



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## ENHANCED SEISMIC DESIGN INTEGRATED INTO A MULTI-HAZARD DESIGN APPROACH

Sponsored by the EERI Friedman Family Visiting Professionals  
Program

Dr. Nathan C. Gould, D.Sc., P.E., S.E.

**Abstract:** Multi-Hazard design, which incorporates both natural and manmade hazards, has become a popular design requirement for critical structures. While many Owners and various project team members anticipate a relatively straightforward integration of the respective hazards based on their understanding of the loads generated by the hazards, numerous complexities arise during the actual integration of a multi-hazard design approach into construction documents.

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**Registration required through the EERI FFVP website for attendance - <https://eeri.swoogo.com/2021ffvp>**

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## Post-Earthquake Reconnaissance

by Dr. Nathan Gould

Join *Dr. Nathan Gould* for an informal talk about his experiences as a member of a **Post-Earthquake Reconnaissance** Earthquake Engineering Research Institute (EERI) team in New Zealand after the 2011 Christchurch earthquake.

**Zoom link for event -**

<https://umass-amherst.zoom.us/j/94345041652>

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