

2017-2018 ANNUAL REPORT

University of Notre Dame Student Chapter of the Earthquake Engineering Research Institute



Report Date: April 30, 2018

This report summarizes the membership and activities conducted by the University of Notre Dame Student Chapter of the Earthquake Engineering Research Institute during the 2017-2018 academic year.

MISSION & GOALS

In light of the recent disasters, which have claimed so many lives and destroyed so much property, it is essential that engineers become aware of the increasing threats of natural hazards and techniques to mitigate them. While research at the University of Notre Dame focuses in many of these areas, a vast majority of the undergraduate population is unaware of such efforts. Thus, EERI@UND was established to provide the next generation of practicing engineers with a venue to discuss the latest developments in the areas of Earthquake Engineering to better prepare them for the challenges which will await them in their careers.

Awareness, however, should not be limited solely to engineers as earthquakes affect every aspect of human life. Thus EERI@UND will also extend its mission to educate and increase awareness of natural disasters and mitigation techniques across this campus and the wider community.

Our parent organization, EERI, is a nationally recognized organization dedicated to reducing earthquake risk by advancing the science and practice of earthquake engineering by improving the understanding of the impact of earthquakes on the physical, social, economic, political, and cultural environment, and by advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes.

MEMBERSHIP

The University of Notre Dame Student Chapter had a total of 6 members in 2017-2018.

OFFICERS

The Board consisted of the following members:

Role	Name	EERI Member Number	Email	Student Status
President	Robert Devine	18215	rdevine@nd.edu	Graduate student
Vice President	Dimitrios Patsialis	19567	dpatsial@nd.edu	Graduate Student



FACULTY & INDUSTRYADVISORS

Dr. Alexandros Taflanidis
 Associate Professor
 Department of Civil & Environmental Engineering & Earth Sciences
 University of Notre Dame
 Notre Dame, IN
 (574) 631-5696
 a.taflanidis@nd.edu
 EERI ID# 10912

MEMBERS

A complete list of members is shown below.

Name	EERI Member Number	Email	Student Status
Robert Devine	18215	rdevine@nd.edu	Graduate student
Dimitrios Patsialis	19567	dpatsial@nd.edu	Graduate Student
Yenan Cao	18263	ycao2@nd.edu	Graduate Student
Shuo Yang	18217	shuo.yang.109@nd.edu	Graduate Student
Theresa Aragon	14609	taragon@nd.edu	Graduate Student
Aikaterini Kyprioti	19687	akypriot@nd.edu	Graduate Student

CHAPTER ACTIVITIES

REGULAR CHAPTER MEETINGS

Meetings: September 12, 2017; October 4, 2017; November 29, 2017; January 15, 2018

During our meetings throughout the year, the goals that the group wanted to accomplish throughout the school year were discussed. The group decided that they wanted to focus a lot of their efforts on community outreach. At the meetings, different community outreach programs were developed and the local schools that we would work with were determined. The student chapter was also spoke about our interest in ag ain hosting a Friedman Family Visiting Professional, and discussions on who our student body would find most beneficial were had. There were discussions in the meetings about attempting to gain interest in the undergraduate Seismic Design Competition. In the end, we were unable to garner enough support, though we feel if we start promoting it sooner there may be interest next year.

FRIEDMAN FAMILY VISITING PROFESSIONAL or DISTINGUISHED LECTURE VISIT

On April 24th, 2018, our student chapter hosted David A. Friedman as part of the Friedman Family Visiting Professional Program. During his visit, David met with our chapter's student leadership, met with faculty which spoke with him about the research and outreach initiatives at Notre Dame related to earthquakes, had an informal meeting with the student chapter to discuss career opportunities and contemporary issues facing earthquake engineers, and was given a tour of a new renovation to Notre Dame Stadium. The visit ended with David's excellent seminar, "Earthquakes & Structural Engineering: Practice & Project Perspectives," which provided insights of lessons about structural engineering and earthquake response efforts he learned from earthquakes throughout the years, such as Loma Prieta (1989), Kobe, Japan (1996), and Wenchuan, China (2008). Finally, David presented on the seismic retrofit of the San Francisco City Hall, a historic structure which incorporated base-isolation to retain the architecture of the super structure, and UC Berkeley Memorial Stadium, which crosses the active Hayward fault line. After the seminar, David had dinner with a few of the Notre Dame faculty, including EERI Student Chapter Advisor Alexandros Taflanidis.



Shakes and Quakes (Sept. 22nd and Oct. 13th, 2017)

The Shakes and Quakes program was completed for the second consecutive year with Avilla Elementary School. For this program, on September 22nd, two graduate students visiting Avilla Elementary school and presented to the 6th grade students what earthquakes are, what causes them to occur, and how we build buildings to survive ground shaking. After the presentation, the students were broken into teams of 4 or 5 students and provided Legos to build skyscrapers that would be put to the test of ground shaking. Each team had a builder, engineer, architect, and owner, and the goals were to build a building which was profitable (floor space and window space on high floors) and could survive ground shaking. The students worked on their buildings as part of their curriculum for two weeks and then brought their buildings to Notre Dame. There, the buildings were tested using our shake table, and the strongest building was crowned. Other awards for more aesthetic and most profitable were also awarded. This initiative will hopefully continue this fall and is only possible through the help of the teachers at Avilla Elementary, including Trina Leffers who coordinated their side of the event wonderfully.



High School Bridge Activity (Dec. 1st, 2017)

For this event, six of the chapter members helped with this activity with local Clay High School. High school students who were currently in AP Calculus were invited to Notre Dame to participate in a practical application of integration in structural engineering. During the activity, Robert Devine led the group in the calculation of bridge deflections due to point loading at different locations of a simply supported arch bridge. During the activity, the students were shown first how the integration they were learning was applicable, and then were asked to complete a few integrals in small groups, with the help of the graduate students. To end the activity, the students were shown a physical model that was loaded and a numerical model in SAP2000 and they were asked to compare the deflections to their theoretical results found by integration. This initiative will hopefully continue this fall and is only possible through the help of the Gene Buczynski, the calculus teacher at Clay High School.

Concord Jr. High Assembly (Dec. 11th, 2017)

Concord Jr. High School requested our student chapter for an assembly to wrap up their own curriculum on Rube Goldberg machines. The students had been creating these projects the weeks prior, and we were asked to present how their critical thinking and problem solving for their projects could be applied to engineering. Our presentation introduced all fields of engineering and their scopes and then discussed what structural and earthquake engineers do and the challenges they face. To relate to their project, the presentation finished with some innovative solutions to engineering challenges, such as base-isolation. We also brought our shake table with us to the presentation and demonstrated the effect of ground motion frequency on both tall and squat K'nex structures. The student chapter would like to thank Matthew Jerlecki for the invitation to present and hope to continue our relationship with Concord Jr. High.

Northpoint Elementary Science Night (Jan. 25th, 2018)

Our student chapter visited Northpoint Elementary School in South Bend, IN and participated in their Science Night events. Professor Yahya Kurama explained the concepts and advantages of a tuned mass damper by demonstrating the response of a high-rise building model with and without a simplified tuned mass damper.



ELECTION & ELECTION RESULTS

An election for officers for the 2018-2019 academic year was held in May 2018. The table below shows the new officers appointed to the Chapter board who will take office on August 2018.

Role	Name	EERI Member Number	Email	Student Status
President	Dimitrios Patsialis	19567	dpatsial@nd.edu	Graduate Student
Vice President	Karen Angeles		kangeles@nd.edu	Graduate student

FEEDBACK FOR EERI

The University of Notre Dame student chapter would like to take this opportunity to thank EERI for their support of our chapter. Our participation the last few years in the Friedman Visiting Professional Program has been very rewarding. In the upcoming years, we would like to continue our participation in this program and try to promote more EERI sponsored programs, such as the SDC.