

2015-2016 ANNUAL REPORT

University of Texas at Austin Student Chapter of the Earthquake Engineering Research Institute



Report Date: May 6, 2016

This report summarizes the membership and activities conducted by the University of Texas at Austin Student Chapter of the Earthquake Engineering Research Institute during the 2015-2016 academic year.

MISSION & GOALS

The Student Chapter of the Earthquake Engineering Research Institute (EERI) at the University of Texas (UT) at Austin, hereafter referred to as the Chapter, serves to further the mission of EERI by disseminating knowledge about earthquakes and their effects, and the mitigation of earthquake hazards through engineering. To this end, the Chapter organizes seminars and outreach activities, and encourages the student body to join EERI. The Chapter was founded in 1992 and has been continuously active since that time. In the following report, we present information about the membership in the chapter and its activities during the 2014-2015 academic year.

MEMBERSHIP

The University of Texas at Austin Student Chapter had a total of 27 members in 2015-2016.

OFFICERS

The Board consisted of the following members:

Role	Name	EERI Member Number	Email	Student Status
President	Anne Hulse	16179	annehulsey@utexas.edu	Graduate student
Vice President	Stalin Armijos	17355	starmijos@utexas.edu	Graduate student
Treasurer	David Teague	16035	dteague@utexas.edu	Graduate student
	Andrew Stolte	16034	a.c.stolte@utexas.edu	Graduate student
	Xiaoyue Wang	18066	xy_wang@utexas.edu	Graduate student

Board meetings were on the following dates to plan activities: 9/14/2015, 10/6/2015, 11/11/2015, 2/5/2016, and 2/22/2016, 4/17/2016.

FACULTY & INDUSTRY ADVISORS

Patricia Clayton, Ph.D.

Assistant Professor, 301

E. Dean Keeton St. ECJ 4.708

Austin, Texas 78712

clayton@utexas.edu

(512) 471-9176

Ellen Rathje, Ph.D

Professor

E. Dean Keaton St. ECJ 9.227C

Austin, TX 78712

e.rathje@mail.utexas.edu

(512) 232-3683

MEMBERS

A complete list of members is shown below.

Name	EERI Member Number	Email	Student Status
Alafifi, Laila	18713	lailaalafifi13@gmail.com	Undergraduate student
Armijos, Stalin	17355	starmijos@utexas.edu	Graduate Student
Arterburn, Hailey			Graduate Student
Cheng, Christine	18431	christinecheng1119@gmail.com	Undergraduate student
Ebrahimkhanlou, Arvin			Graduate Student
El-Afifi, Tarek	18402	telafifi@gmail.com	Undergraduate student
Finklea, Mackenzie	18655	macfink@att.net	Undergraduate student
Galloso, Jordan	18684	jrgalloso@gmail.com	Undergraduate student
Gragg, Casey	18664	caseygragg26@utexas.edu	Undergraduate student
Hulsey, Anne	16179	annehulsey@utexas.edu	Undergraduate student
Hynes, Erin	18665	hynes.erin00@utexas.edu	Undergraduate student
Limantono, Albert	18012	albert_agvan@utexas.edu	Graduate Student
Mast, Arqa	18658	arqam110@gmail.com	Undergraduate student
McLaughlin, Kaleigh	15409	kmclaug2@nd.edu	Graduate Student
Nakamura, Yuta	18298	ynakamu2@utexas.edu	Graduate Student
Ozgelik, Ahmet	17587	yigit@utexas.edu	Graduate Student
Philpott, Andrew	18434	ajphilpott@utexas.edu	Graduate Student
Prakhov, Vyacheslar			Graduate Student
Roberts, Julia	15195	jnroberts@utexas.edu	Graduate Student
Stolte, Andrew	16034	a.c.stolte@utexas.edu	Graduate Student
Tao, Yumeng			Graduate Student
Teague, David	16035	dteague@utexas.edu	Graduate Student
Varughese, Nancy	18405	varughesenancy@utexas.edu	Undergraduate student
Wang, Xiaoyue	18066	xy_wang@utexas.edu	Graduate Student
Xu, Boqin	18064	boqinxu@utexas.edu	Graduate Student
Zhao, Stephen	18264	stephen.zhao@utexas.com	Graduate Student
Zhu, Sharon	18669	sharonzhu@utexas.edu	Undergraduate student

BUDGET & FINANCIALS

The student chapter of EERI at UT Austin has two accounts with the university, which have a cumulative balance of \$144.25. The membership dues received from the national chapter support lunches for our seminars and outreach activities. The seismic design team is self-funded and raises the majority of their money from corporate supporters.

CHAPTER ACTIVITIES

Seminars

Dr. Ellen Rathje (September 23, 2015)

This talk explored the application of optical image correlation techniques to high resolution optical satellite imagery. This techniques was applied to imagery from Christchurch, New Zealand, to measure lateral spreading and surface deformations.

David Teague and Yigit Ozcelik (November 18, 2015)

David and Yigit, both PhD students at the University of Texas, discussed aspects of their research. David discussed the development of realist Vs profiles in the complex inter-bedded geology of Christchurch, New Zealand. Yigit discussed seismic aspects of suspended zipper braced frames.

Dr. James Jirsa (February 24, 2016)

This task explored the topic of seismic rehabilitation of reinforced concrete structures.

FRIEDMAN FAMILY VISITING PROFESSIONAL or DISTINGUISHED LECTURE VISIT

Dr. Robert Olshansky, EERI Distinguished Lecture (October 31, 2015)

This talk explored the relationship between earthquakes and time, describing how various time characteristics of earthquakes affect policy decisions. Earthquake-time relationships provide insights about how to make human settlements more resistant to earthquakes at the time they occur and more resilient after they occur. In particular, four specific policy conclusions will be drawn from this rumination on time.

Ivan G. Wong, Friedman Family Visiting Professional (April 27, 2016)

This talk addressed the growing concern regarding induced seismicity related to the oil and gas industry by discussing the associated science, risks and politics. In addition to a better understanding of what site factors lead to induced seismicity and how to predict/control the induced earthquakes, it is important to be able to estimate the hazards posed. To that end, a ground motion model should be developed that addresses whether the ground motions for the induced earthquakes are different from natural ones and how they scale with distance and magnitude.

Outreach Activities

Participation in Explore UT (March 5, 2016)

Explore UT is an open house organized by the university and is a major university-wide outreach event attracting the general public, especially primary, middle, and high school students. The Chapter attempted to introduce the concepts of seismic design to the students through the construction of buildings using tooth picks (for members) and marshmallows (for joints), as shown in Figure 3. The buildings were then testing on a drill-

operated shake table. The Chapter also displayed a set of posters describing earthquakes, earthquake safety, geotechnical seismic hazards, historical earthquake damage, and how earthquakes affect buildings.

Shake Table Competition for St. Stephen's Episcopal School Students (March 31, 2016)

EERI officers organized a shake table competition for approximately 25 students from St. Stephen's Episcopal School. The format of the competition was similar to EERI's annual Undergraduate Seismic Design Competition (SDC). Students teamed up to create structures, which were tested on a shake table at UT Austin's Ferguson Structural Engineering Laboratory (FSEL). Immediately after the competition, students were given a presentation by the SDC team members pertaining to opportunities to get involved in student groups as an undergraduate student. Additionally, Dr. Patricia Clayton presented on earthquake engineering and structural engineering research. The presentation was followed by a tour of current FSEL projects, the NHERI@UTexas equipment facility, and a demonstration using a shaker truck.



Figure 1: Students secure their structure to the shake table for seismic testing.

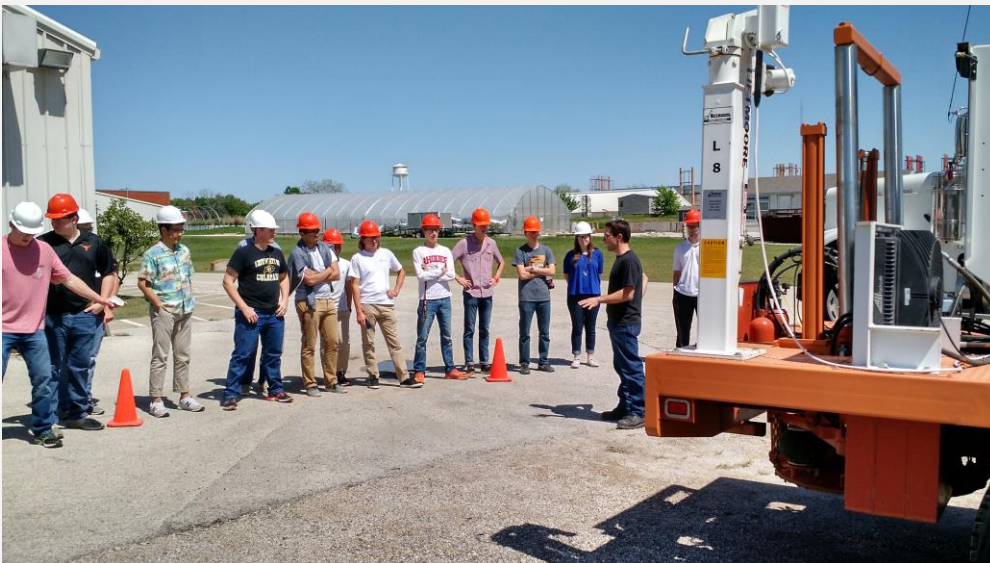


Figure 2: Students attentively watching a shaker truck demonstration.

SEISMIC DESIGN COMPETITION TEAM

This year a seismic design team, consisting of 10 members, traveled to San Francisco to compete in the annual seismic design competition.

SDC Team Members

A complete list of members is shown below.

Name	EERI Member Number	Email	Student Status
El-Afifi, Tarek	18402	telafifi@gmail.com	Undergraduate student
Finklea, Mackenzie	18655	macfink@att.net	Undergraduate student
Varughese, Nancy	18405	varughesenancy@utexas.edu	Undergraduate student
Zhu, Sharon	18669	sharonzhu@utexas.edu	Undergraduate student
Galloso, Jordan	18684	jrgalloso@gmail.com	Undergraduate student
Gragg, Casey	18664	caseygragg26@utexas.edu	Undergraduate student
Alafifi, Laila	18713	lailaalafifi13@gmail.com	Undergraduate student
Cheng, Christine	18431	christinecheng1119@gmail.com	Undergraduate student
Hynes, Erin	18665	hynes.erin00@utexas.edu	Undergraduate student
Mast, Arqa	18658	arqam110@gmail.com	Undergraduate student

SDC Team Financial Supporters

A list of financial supporters for the SDC team.

Name	Email	Amount	Note
David Finklea	Dfinklea@savills-studley.com	\$1000	Savills Studley
Dr. Kenneth Stokoe	k.stokoe@mail.utexas.edu	\$500	Professor of Geotechnical Engineering at UT Austin
Ed Bowerman	Ebowerman@savills-studley.com	\$250	Savills Studley
Kevin Hodges	khodges@savills-studley.com	\$250	Savills Studley
Steven Biegel	Sbiegel@savills-studley.com	\$250	Savills Studley
Steven Driver			D E Harvey Builders

Team results and lessons learned

This year The University of Texas at Austin was able to compete in EERI's 2016 Undergraduate Seismic Design Competition (SDC) held in San Francisco, California. Our team designed a structure composed of lateral X-bracing to be tested for seismic performance by a shake table. Presentations were given by the members to explain the structural and architectural intents of the design, and a poster presentation was created to further explain our structural model.



The competition allowed our team to engage in earthquake engineering concepts, apply SAP & REVIT software and be prepared for next year's competition. We are thankful to our sponsors who helped fund materials and travel costs.



Figure 3. Balsa wood structure



Figure 4. Rendered view of High-Rise through REVIT 2016 software

ELECTION & ELECTION RESULTS

An election for officers for the 2016-2017 academic year was held in April 2016. The table below shows the new officers appointed to the Chapter board who will take office on August 2016.

Role	Name	EERI Member Number	Email	Student Status
President	Stalin Armijos	17355	starmijos@utexas.edu	Graduate student
Secretary	Xiaoyue Wang	18066	xy_wang@utexas.edu	Graduate student
	Andrew Stolte	16034	a.c.stolte@utexas.edu	Graduate student