PI TAU SIGMA ANNUAL CHAPTER REPORT
2015-2016
Stevens Phi Omicron

A. Initiations

Stevens Institute of Technology follows a broad based engineering curriculum with a common core for the first three semesters and students are not required to declare their engineering major before their fourth semester. In addition, nearly a quarter of all engineering students complete 3 to 4 semesters before declaring their major.

In order to ensure that all initiates graduate as Mechanical Engineering majors, the chapter has established a policy to initiate only juniors (5th and 6th semesters) and seniors (in their 7th semester). Students who have excellent academic record (top sixth or 16.7% and who have a GPA of 3.65 or "High Honors") and who are in good standing are reviewed and invited to become members of the Stevens Phi Omicron Chapter.

During AY 2015-16, Stevens conducted two initiation ceremonies. The fall initiation ceremony for the Academic year was conducted on December 3, 2015 and 18 new members were initiated. The spring initiation ceremony was conducted on May 2, 2016 and 6 new members were initiated. The following is a listing of the AY 2015-16 initiates.

Fall 2015 Initiates:

Duong, Ton	Flynn, Ryan T.
Giambalvo, Jack W.	Guglielmo, Luke A.
Kasabwala, Radhika R.	Klem, Ryan K.
Laggner, John W.	McIlraith, Richard W.
Morris, Elizabeth M.	Paulsen, Glenn E.
Schnering, Kyle R.	Shah, Dharmin
Smith, Peter	Volz, Christopher A.
Winship, Miles B.	Youssef, Michael

Spring 2016 Initiates:

Alecci, Katelyn S.	Fratto, Brian C.
Napolitano, Kyle R.	Roche, Jeremy
Squier, Jesse D.	Zecchino, Nicholas M.

The chapter pays the dues for all the students who are initiated. In addition, the chapter also provides stoles at no cost to all graduating seniors, who are members of the chapter. Funds for all chapter activities and socials are provided by the Mechanical Engineering Department.

B. Chapter Activities

Goals for 2015-16

- Initiate Members from the Senior and Junior Class during 2015-16 academic year

- Participation in the Annual Pi Tau Sigma conference, out-reach activities, and co-sponsorship of student-faculty activities.
- Participation in the 2016 Research and Innovation Expo and Engineering Design Day Events (jointly held on April 27, 2016).
- Promotion of events associated with promoting Mechanical Engineering and involvement in the Stevens Innovation and Entrepreneurship activities.
- Participation in the ASME Region II student conference and in the design and oral presentation competitions.
- Continue the development of STEM club activities to encourage talented students, especially those from underrepresented communities to pursue engineering career
- Participation in community and outreach activities.

All goals for AY 2015-16 were met and the following is a brief summary of chapter activities.

Activities

The special outreach program involving the organization of a STEM Club, which was started at the Lady Liberty Academy Charter School in Newark during spring 2014 and expanded during 2015 was continued with two specific events. The first involved the True Mentors program of Hoboken while the second involved the Lady Liberty Charter School in Newark.

The True Mentors program is an after school program which works with 2nd through 8th graders. The chapter developed and presented modules with lessons followed by hands-on projects to introduce basic concepts in engineering and science. The projects included egg drop with a challenge to design and build device which would stop an egg from cracking when it was dropped from the second story of a building; thermodynmics and the process of making ice-cream (with students sharing the outcome); lightweight structure design with toothpicks and popscicles, among others. The program was administered during both the fall semester and repeated again during the spring semester for a different group of students.

Students in the True Mentors program displaying their lightweight structure construction

The after-school STEM club activity at the Lady Liberty Charter School was a continuation effort that focused on getting the middle school students interested in math and science by giving them more in-depth lessons and performing activities with them. The lessons consisted of modules on thrust and propulsion, which was coupled with a balloon racing activity; design concepts for different types of bridges followed by a popsicle-bridge building activity; force, motion and momentum with an activity on building marble rollercoasters. The kids interacted with the Stevens students and activities were provided immediately after the lesson to reinforce the concepts discussed during the lecture.

These were enriching experiences at the culmination of which the Stevens students were recognized for their dedication and service.

The Stevens Phi Omicron chapter again assisted the Mechanical Engineering Department with the open house for accepted students, which was hosted by Stevens on Saturday and Sunday, April 16-17, 2016. In addition to volunteering their time for the various laboratory tours and for interactions with the students and parents several senior capstone design projects were on display, including the award-winning Exoskeleton system, Omnibot, the Regular and Advanced Class SAE Cargo planes, Shell Eco-Marathon Car, the Formula SAE car, among others.

Stevens celebrated the Research & Innovation accomplishments and the successful completion of the Engineering Capstone Design of its graduating class on April 27, 2016 with the Innovation Expo — an all-day campus gathering of Students, Faculty and Business Community. The annual campus event, organized by the Office of Innovation & Entrepreneurship, has always been a showcase of the creativity and problem-solving capabilities of interdisciplinary student teams that reflect the university's academic approach to science, engineering, business and humanities. The Stevens Phi Omicron chapter assisted the Mechanical Engineering Department with the set up for the event. Various capstone design projects were on display and they included the following from the Pi Tau Sigma members.

- Heavy Lift Cargo Plane Design (Logan Bagarozy)
- Myofascial Release Device (Angela Bauroth)
- Ergo-Breath CPAP (Continuous Positive Air Pressure) Mask (Andreas Pallikaras)
- Design of Water Purification System for Developing Countries (Isaac Downey)
- Solar Water Purification System Design (Ann Heine)
- Additive Manufacturing of a Heat Exchanger (Carly LaGrotta)
- Next Generation Multi-Functional Skylight (Mils Winship)
- Stabilizer Design for Paddle Board (Holly Good, Cathryn Shelton)
- Autonomous Vehicle Reconnaissance System Design (Hyun June H. Ferrabolli)
- Upper Body Exoskeleton Project (Ryan Oldja)
- Sustainable and Resilient Playground (Caroline L. Niezelski)
- Solar Powered Pump (Tyler J. Rishell)
- Omnibot Robotic Platform Design (Eric A. DelSanto)
- Biofish: PFD (Personal Flotation Device) Design (Peter W. Giannini)
- Solar Decathlon 2015: SURE (Sustainable Resilient) Prototype for Coastal Communities (Matthew Defeligibus, Michael-Robert Lewis)

The ergo-Breath CPAP (Continuous Positive Air Pressure) Mask: a schematic rendition.

The chapter again successfully organized and implemented an academic tutoring program for the mechanical engineering undergraduate students during the fall and the spring terms. The event covered all core engineering topics for the sophomore and junior class with a special review during the final exam period.

The Stevens Phi Omicron chapter has developed an Alumni Networking Database to track where alumni move to, work, or have previously worked, along with their contact information. This will be a living document that will continue for years to come.

Ms. Carly LaGrotta (chapter president) represented Stevens at the centennial Pi Tau Sigma National conference at the University of Southern California, Los Angeles (February 19-21, 2016).

The chapter members also volunteered at all the student visit days for the Mechanical Engineering department, and participated in various Mechanical Engineering panels and gave feedback to the External Advisory Board.

In addition, as part of social outreach, several members of the chapter volunteered at the local Soup Kitchen (in Hoboken) on three different nights during the holiday period and helped with preparing and serving meals.

A number of current Stevens Pi Tau Sigma chapter members are also elected members of the Alpha chapter of the Tau Beta Pi, the engineering honor society and several are current and past chapter officers.

The Solar Decathlon competition organized by the U.S. Department of Energy selects student teams based on their proposal to design, build, and operate solar-powered houses that are cost-effective, energy-efficient, and attractive (www.solardecathlon.gov). Solar Decathlon teams are required to design, construct, and test their houses before reassembling them at the Solar Decathlon competition site. The winner of the competition is the team that best blends affordability, consumer appeal, and design excellence with optimal energy production and maximum efficiency. Teams from five countries across two continents, including teams from universities in the United States, Germany, Honduras, Italy and Panama were invited for the 2015 Solar Decathlon competition (October 2015). The SURE House marks Stevens' third, consecutive entry in this prestigious biannual competition since 2011. In addition to the overall prize, the Stevens SURE house outshined more than a dozen other student teams from universities around the world, ranking highest in architecture, market appeal, communications, appliances, engineering, commuting and home life. Matthew Defeligibus and Michael Robert-Lewis (chapter members who are graduates, class of 2015) and Sarah Zahran, chapter vice president (pursuing Bachelors and Masters in 4 plus 1 program) were part of the award winning team.

The Stevens SURE (Sustainable and Resilient) house – 2015 Solar Decathlon winners

The chapter's web page (www.stevens.edu/pts) has been updated.

Graduates

Bagarozy, Logan
DelSanto, Eric A.
Ferrabolli, Hyun June H.
Good, Holly E
LaGrotta, Carly E.
Oldja, Ryan T.
Rishell, Tyler J.
Winship, Miles Bradford
Bauroth, Angela R.
Downey, Isaac
Giannini, Peter W.
Heine, Ann E.
Niezelski, Caroline L.
Pallikaras, Andreas I.
Shelton, Cathryn L.

Awards & Recognition

Several of the Stevens Phi Omicron chapter members from the 2016 graduating class were recognized for their academic excellence and participation in various extra-curricular activities during the graduation.

The following chapter members of the graduating class were recognized for their academic excellence.

- **Logan Bagarozy** was the recipient of the *Fernando Sisto Award* for his outstanding performance in Turbomachinery and Aerospace.
- **Peter W. Giannini** received the *Robert Oakner Award* for demonstrating the innovative spirit, creativity, and resourcefulness during the course of his senior capstone design project.
- **Carly E. LaGrotta** was the recipient of the *Richard S. Magee Excellence Award* for demonstrating both extracurricular involvement and leadership in departmental and campus activities.
- **Carloine L. Niezelski** was the recipient of the *Elie Fonrose Award* for his promise of advancement in the field of aerospace engineering.
- **Ryan T. Oldja** received the *Arthur J. Grymes award* for demonstrating greatest interest and proficiency in fluid mechanics.
- **Andreas I. Pallikaras** was the recipient of the *Andrew Carnegie Machine Systems Award* for being an outstanding student in Machine Systems and Design.
- **Tyler J. Rishell** received the *Kenneth J. Moser Award* in recognition of her outstanding performance in heat transfer.

The following members of the Stevens Pi Tau Sigma chapter graduating class of 2016: **Logan Bagarozy, Eric A. DelSanto, Isaac Downey, Carly E. LaGrotta,** and **Andreas I. Pallikaras** were also members of Tau Beta Pi, the Engineering Honor Society.

Caroline L. Niezelski and **Andreas I. Pallikaras** received both a Bachelors degree in Mechanical Engineering with High Honors as well as a Master of Engineering Degree.

At the state level, **Carly E. LaGrotta**, **Cathryn L. Shelton** and **Sarah A. Zahran** were selected from Stevens to receive the *NASA New Jersey Space Grant Fellowship* for their outstanding academic record. As part of this *state-wide* award they each participated in a research project of

aerospace relevance and presented a research paper and poster at the state-wide *NASA New Jersey Space Grant* meeting (Rutgers University) to highlight their work.

Plans for 2016-2017

Our plans for the upcoming year consist of educational, social, and outreach activities. Among others, it will include, among others:

- Mentoring of freshmen and sophomores interested in pursuing mechanical engineering
- Enhancement of the STEM club and participation in the outreach activities to expose high school and middle school students, especially those from under-represented groups, to the excitement of mechanical and related engineering fields
- Participation in the Stevens Innovation and Entrepreneurship programs
- Sponsorship of engineering seminars, co-sponsorship and participation in professional society student chapter activities
- Promotion and publicizing of the Mechanical Engineering program activities within Stevens.

In addition, the chapter plans to distribute the stoles and recognize the graduating seniors during the annual banquet.

Chapter Officers

President:	Carly E. LaGrotta
Vice President:	Sarah C. Zahran
Secretary-Treasurer:	Isaac Downey
President Elect:	Annemarie Thomas
Vice President Elect:	Luke A. Guglielmo
Secretary-Treasurer Elect:	Nicholas M. Zecchino

The elections for the chapter officers were held on May 2, 2016 following the initiation ceremony. The current group of officers explained the responsibilities and chapter activities to the officers-elect who will govern during the 2016-17 academic year. The chapter responsibilities were transferred during the last week of the term.

Chapter Advisor: Siva Thangam, Professor, Department of Mechanical Engineering**,** Stevens Institute of Technology, Castle Point on Hudson, Hoboken, NJ 07030 **(**sthangam@stevens.edu**)**

Chapter Website: www.stevens.edu/pts

Reporter: Siva Thangam