PI TAU SIGMA ANNUAL CHAPTER REPORT
2018-2019
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 3.7 or "High Honors") and who are in good standing are reviewed and invited to become members of the Stevens Phi Omicron Chapter.

During AY 2018-19, Stevens conducted two initiation ceremonies. The fall initiation ceremony for the Academic year was conducted on December 5, 2018 and 25 new members were initiated. The spring initiation ceremony was conducted on May 7, 2019 and 5 new members were initiated. The Chapter Officers and the Faculty Advisor officiated the initiation ceremony. The following is a listing of the AY 2018-19 initiates.

Fall 2018 Initiates:

Akther, Nazrin
Barnes, Melissa Leigh
Cooke, Emily Rose
Demetillo, Mark Anthony Gomez
Gonzalez, Carlos Andres
Huang, Chih-Wei
Moss, Jack Wesley
Ramani, Haren Manish
Russo, Vincent Edward
Schattin, Samantha Reilly
Shah, Pujan K.
Spirer, Rebecca Lynn
Sugarman, Alex M.
Allecci, Michael V.
Catalano, Jake Stephen
Dello Russo, Gina E
Deng, Boyu
Hu, Qiaomu
Mao, Yue
Pontoriero, Carolyn Michelle
Rossbach, Richard Pastore
Saade, Gabriella Hannah
Sette, Joseph Anthony
Shine, Timothy M.
Stewart, Shelly Mae

Spring 2019 Initiates:

Bech-Hansen, Victor
Clodfelter, John Robert
Langner, Luke Mediterraneo
Cho, Sophie Hyun-Ju
Kaba, Daniel William

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 2018-19

- Initiate Members from the Senior and Junior Class during 2018-19 academic year
- Participation in the Annual Pi Tau Sigma conference, out-reach activities, and co-sponsorship of student-faculty activities.
- Participation in the 2018-19 Innovation Expo held on May 3, 2019 (the event hosted capstone design projects and an exposition of ongoing research and innovation).
- Promotion of events associated with promoting Mechanical Engineering and involvement in the Stevens Innovation and Entrepreneurship activities.
- Continue the development of STEM club activities to encourage talented students, especially those from underrepresented communities to pursue engineering career
- Mentoring of freshmen and sophomores interested in pursuing mechanical engineering
- Sponsorship of engineering seminars, co-sponsorship and participation in professional society student chapter activities
- Participation in community and outreach activities.

All goals for AY 2018-19 were met and the following is a brief summary of chapter activities.

Activities

The Stevens Phi Omicron chapter participated in the fall and spring Mechanical Engineering Advising fairs for students in their sophomore and junior years. Chapter members also served in the Engineering Panel for the Introduction to Engineering (E-101).

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 chapter assisted the Mechanical Engineering Department with the open house for accepted students, which was hosted by Stevens on Saturday and Sunday, April 13-14, 2019. 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 Off-Road Vehicle (SAE Design Competition entry), among others.

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 several events to host students in 6th through 8th grade.

Stevens celebrated the Research & Innovation accomplishments and the successful completion of the Engineering Capstone Design of its graduating class on Friday, May 3, 2019 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 graduating class of Stevens Phi Omicron.

- Aerial Vehicle with Autonomous Glider Launch System (Eric Kerestes)
- Anti-Drone Privacy Perimeter Defense (Patrick Sobota)
- ASTRAL NASA Space Tug (Haley Hyland)
- Atmospheric Water Generator (Boyu Deng)
- Automated Piano Tuning System (Alexis Paolella)
- Bicycle Safety Vision System (Alexander Kennedy)
- Deep Ocean Aquaculture System (Julianne Depardieu)
- DEIMOS NASA Rascal Mars Exploration (Dana Roe)
- Edible Food 3D Printer (Yue Mao)
- Educational Platform Design for Musical Instrument Displays (Jieyu Liu)
- Guidewire Force Sensor for Neural Surgery (Joseph Conway)
- Heavy Lift Cargo Plane Design (Gianna Fazio, Morgan Lynn, Nikolas Lambert, Nicholas Orlando)
- Innovative Catheter System (Cam Nguyen, Christopher Reed)
- Intraocular Pressure Sensor-embedded Contact Lens (Michael Armstrong)
- Last Stage Drone Delivery System (Charles Kawalski, Austin Lowey)
- Lightweight Tactical Ladder System (Anthony Lanza)
- Low-Cost Single-Stage Rocket Design (Abraham Edens, Thomas Flaherty, William Skwirut)
- Maritian Glider Design (Anthony D'Aiuto, Bryan Vitz)
- Mechanized Ordnance Carrier and Loader (Nayeem Kareem)
- Off-Road Vehicle Design (Anthony Costagliola, Ryan Gutmann, William Harris, Peter Misthos)
- Omnidirectional Wheel System Design (Alexander De Rosa)
- Personal Flotation Device (Aidan Petti)
- Robot-Assisted Motor Oil Blending System (Leon Kirman)
- Solar Electric Boat Regatta (Victoria Davis, Megan Hand, Justin Sitler, Melanie Valentin)
- STELLA NASA Lunar Lander (Carlos Gonzalez)
- Thermoelectric Wearable Energy Harvesting System (Daniel Poidomani)
- Tunnel Boring Robot Design (Alex Sugarman)
- Vacuum-Evaporation Water Purification System (Robert Shea, Nicolette Gurgone)
- Wearable Sensor System for Justice Evidence (Matthew Digilio)

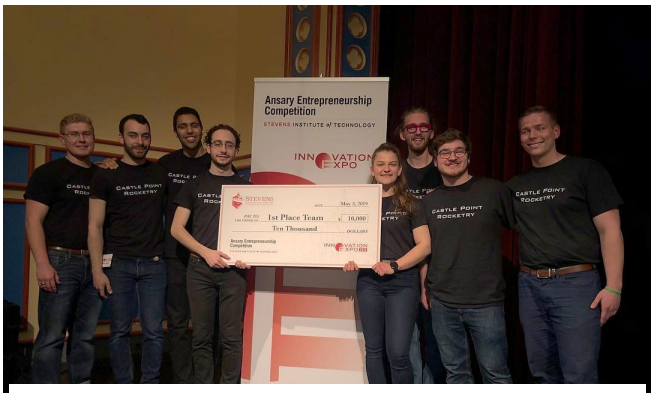
The Stevens Phi Omicron chapter continued its development of an Alumni Networking Database to track where alumni move to, work, or have previously worked, along with their contact information. This will be a living document that will continue for years to come.

Mr. Anthony Lanza (chapter president) represented Stevens at the centennial Pi Tau Sigma National conference at the Colorado State University (Boulder, during February 15-17, 2019).

Solar Splash, the World Championship of intercollegiate solar/electric boating competition is held annually during mid-June (over five days) in Springfield, Ohio. The six-member team (that included chapter members Victoria Davis, Megan Hand, Justin Sitler and Melanie Valentin) from Stevens placed 3rd overall. They also placed 1st for their technical report, 2nd in the qualifying event, 2nd in the 300-meter sprint – where they achieved speeds over 23 knots, 2nd for solar endurance – traveling over 20 miles, 3rd for visual display and received recognition for their outstanding electrical system design. The Stevens boat featured an ultralight weight carbon fiber composite shell weighing in at just 55 pounds, making it one of the lightest in the competition. It also has a stern appendage, which allowed for transformation of the boat from a planning hull for the high-speed sprint event into a displacement hull to reduce drag during the endurance race.

Stevens 2019 World Solar Splash Award-Winning Entry (rendition) pictured with chapter members Victoria Davis, Justin Sitler and Megan Hand.

An interdisciplinary team of engineering and science students formed Castle Point Rocketry with the mission to be the first collegiate team to develop and build an affordable ground-launched platform capable of surpassing the *Karman Line* (at an altitude of 100 km). Subsequent goal is to develop a small launch vehicle to capitalize on the demand for small payload launches.to develop reusable economical rockets for space application. The team included chapter members Abraham Edens, Thomas Flaherty and William Skwirut, and was able to attract funding and support from several industrial partners for their novel design. The team built a beta version that demonstrated operational feasibility and was awarded joint first place in the 2019 Stevens student entrepreneurship competition. This project was also selected as the co-recipient of the *David and GG Farber Societal Impact Award* for creating awareness among students and the Stevens community of the impact their innovation can have on society at large and the power it has to improve lives all over the world.



Castle Point Rocketry: 2019 Inaugural Ansary Prize for Student Entrepreneurship recipients

Members of the Stevens Phi Omicron chapter again participated in the NASA Rock-Sat-C program that focuses on design, instrumentation, fabrication, testing and launch of payloads (modeled after small sattelites) since 2011 through the sponsorship and grants from the New Jersey Space Grant

Consortium — a NASA supported program to stimulate students to choose careers in aerospace science and engineering, especially students who are female or from under-represented groups. The Rock-Sat-C program mentors ten to twelve collegiate teams from all over the country through a full engineering space flight design process life cycle. The 2018-19 year's program involved the design of a reflow oven capable of soldering surface mount electronic components to a printed circuit board in the microgravity environment to address a NASA goal towards preliminary validation for the development of a reflow soldering oven to be used on long duration manned space missions. The Stevens team successfully tested its design and participated in the launch. The chapter members 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, especially those associated with campus fraternities and sororities, volunteered for various community activities during the holiday period.

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.

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

Graduates

Armstrong, Michael David
Costagliola, Anthony
Davis, Victoria Rose
Depardieu, Julianne Marie
Diglio, Matthew David
Fazio, Gianna Rose
Gonzalez, Carlos Andres
Gutmann, Ryan J.
Harris, William Ryan
Kareem, Nayeem Ahsan
Kennedy, Alexander D.
Kirman, Leon Eoin
Lanza, Anthony Robert
Lowey, Austin
Mao, Yue
Nguyen, Cam Hoang
Paolella, Alexis Z.
Poidomani, Daniel Robert
Roe, Dana Alisabeth
Sitler, Justin Louis
Sobota, Patrick J.
Valentin, Melanie Nicole

Conway, Joseph Thomas, II
D'Aiuto, Anthony, Jr.
Deng, Boyu
DeRosa, Alexander Ralph
Edens, Abraham L.
Flaherty, Thomas E.
Gurgone, Nicolette T.
Hand, Megan Day
Hyland, Haley Michelle
Kawalski, Charles Blake
Kerestes, Eric Alan
Lambert, Nikolas Takis
Liu, Jieyu
Lynn, Morgan John
Misthos, Peter A
Orlando, Nicholas Russell
Petti, Aidan Daniel
Reed, Christopher Michael
Shea, Robert Joseph
Skwirut, William Franklin
Sugarman, Alex M
Vitz, Bryan D

Awards & Recognition

Several of the Stevens Phi Omicron chapter members from the 2019 graduating class were recognized for their academic excellence and participation in various extra-curricular activities during the graduation.

- **Charles B. Kawalski** is a co-recipient of the *Eugene Fezandie Award* for best overall performance by a graduating senior in Mechanical Engineering in the sequence of junior and senior year Mechanical Engineering courses.

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

- **Nicolette Gurgone** is the recipient of the *Kenneth J. Moser Award* in recognition of her outstanding performance in heat transfer.
- **Thomas E. Flaherty** received the *Arthur J. Grymes award* for demonstrating greatest interest and proficiency in fluid mechanics.
- **William R. Harris is** the recipient of the *Richard S. Magee Excellence Award* for demonstrating both extracurricular involvement and leadership in departmental and campus activities.
- **Bryan D. Vitz** is the recipient of the *Fernando Sisto Award* for his outstanding performance in Turbomachinery and Aerospace.
- **Eric A. Kerestes** received the *Col. John Stevens Power and Energy Systems Award* for being the outstanding student of Power and Energy Systems.
- **Anthony Costagliola** received the *Andrew Carnegie Machine Systems Award* for being an outstanding student in Machine Systems and Design.
- **William Skwirut** is the recipient of the *Elie Fonrose Award* for his promise of advancement in the field of aerospace engineering.
- **Justin Sitler** is the recipient of the *Kurt H. Weil Award* for outstanding performance in the Master of Engineering program in mechanical engineering.
- **Abraham Edens, Thomas Flaherty** and **William Skwirut** were the co-recipients of *David and GG Farber Societal Impact Award* for their capstone project for creating awareness among students and the Stevens community of the impact their innovation can have on society at large and the power it has to improve lives all over the world.
- **Abraham Edens, Thomas Flaherty** and **William Skwirut** were also the co-recipients of *Ansary Prize for Student Entrepreneurship* to exemplify academic entrepreneurship that is awarded to the winner of the competition held during the Stevens Innovation Expo.

Several members of the Stevens Pi Tau Sigma chapter graduating class of 2019 were also members of the New Jersey Alpha chapter of Tau Beta Pi, the Engineering Honor Society; and **Jack Wesley Moss** was elected to serve as the Vice President of the chapter.

Alexander De Rosa, Abraham L. Edens, Thomas Flaherty, William R. Harris, Leon E. Kirman, Anthony R. Lanza, Morgan J. Lynn, Justin L. Sitler, and **Melanie N. Valentin** received both a Bachelors degree in Mechanical Engineering with High Honors as well as a Master of Engineering Degree.

Nikolas Lambert is the recipient of the *Residence Life Service* Award, which is presented to the senior who has fostered and enhanced living on campus through outstanding service and involvement in residence

At the state level, **Haley M. Hyland**, **Morgan J. Lynn** and **Dana A. Roe** 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 (at the College of New Jersey) to highlight their work.

Plans for 2019-2020

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

- Promotion and publicizing of the Mechanical Engineering program activities within Stevens
- Recruitment and initiation of new members and participation in the national Pi Tau Sigma conference
- Sponsorship of engineering seminars, co-sponsorship and participation in professional society student chapter activities
- Mentoring of freshmen and sophomores interested in pursuing mechanical engineering
- Continuation of the development of an Alumni Networking Database to track chapter alumni
- Continued participation in the STEM club and 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

In addition, the chapter (with the support of the Mechanical Engineering Department) plans to distribute the stoles and recognize the graduating seniors during the annual banquet.

Chapter Officers

President:	Anthony Robert Lanza
Vice President:	Melanie Nicole Valentin
Secretary-Treasurer:	Peter A. Misthos
President Elect:	Luke M. Langner
Vice President Elect:	Victor Bech-Hansen
Secretary-Treasurer Elect:	Daniel W. Kaba

The elections for the chapter officers were held on May 7, 2019 following the initiation ceremony. The current group of officers explained the responsibilities and chapter activities to the officers-elect who will govern during the 2018-19 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