PI TAU SIGMA ANNUAL CHAPTER REPORT
2011-2012
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 2011-12, Stevens conducted two initiation ceremonies. The fall initiation ceremony for the Academic year was conducted on December 7, 2011 and 12 new members were initiated. The spring initiation ceremony was conducted on April 30, 2012 and 9 new members were initiated. The following is a listing of the AY 2011-12 initiates.

Fall 2011 Initiates:

Abdul Hamid, Muhammad Nabil
Darin, China
Ishar, Nur Athirah
Pawlikowski, Alex R.
Santanello, John J.
Weisman, Samantha Jean
D'Addio, Theresa Ann M.
Fidalgo, Alexandre F.
Mahmood, Nur Najihah
Robbins, William J.
Watson, Jonell B.
Zehra, Syeda B.

Spring 2012 Initiates:

Bastelli, Joseph M.
Crossan, Lindsay R.
Jaye, Trevor
Perelman, Aaron M
Wengenroth, Richard J.
Clark, Philip A.
Hubner, Michael J.
Meyer, Patrick
Scerbo, Mikelann

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 2011-12

- Initiate Members from the Senior and Junior Class during 2011-12 academic year
- Participation in the ASME Region II student conference and in the design and oral presentation competitions
- Participation in the Annual Pi Tau Sigma conference, out-reach activities through the co-sponsorship of faculty-student activities
- Participation in the 2012 Research & Innovation and Engineering Design Day Events (jointly held on April 25, 2012).
- Promotion of entrepreneurship through involvement in the Stevens Research and Innovation program
- Participation in other activities associated with promoting Mechanical Engineering.

All goals for AY 2011-12 were met and the following is a brief summary of other chapter activities.

Activities

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

A special outreach program was conducted this year to promote mechanical engineering (and engineering) to high school students, especially those from the underrepresented community. In this context, an open house and tour of research facilities was organized.

The event started off with a presentation about engineering as a profession with emphasis on mechanical engineering as a broad-based undergraduate program. This was followed by a campus tour and special presentation and tour by the Center for Maritime Systems (which is part of the Stevens Center for Secure and Resilient Maritime Commerce — a U.S. Department of Homeland Security's National Center of Excellence for Maritime, Island and Extreme/Remote Environment Security). The tour included presentations, a walk-through the facilities and a full-fledged display of the experiment at the high-speed towing tank — a straight tank 140 meter long and 3.6 m wide and can support water depths as high as 2 m. It is one of the highest speed towing tanks in the world with a monorail supported, cable driven carriage capable of speeds from 0 to 30 meters per second with speed control of 3 millimeter per second. The high speed tank can produce a wide variety of wave types through an articulated double-flap programmable wave maker. This wave maker generates both regular waves and pseudorandom waves and

can be programmed to produce nontraditional wave forms such as wave pulses, complex periodic waves and dual and triple wave trains. The students were given a variety of demonstrations along with walk-through the exhibit areas.

The second part of the tour covered the anechoic chamber of the Noise Control Laboratory, where the students had a first-hand-exposure to "quiet design" and "noise suppression tip for highway barriers", among others.

Overall this event was a resounding success in exposing the students, especially those from the under-represented community to the fun and excitement of engineering. The event was co-sponsored by SHPE (The Society of Hispanic Professional Engineers).

In addition, the Office of Innovation and Entrepreneurship at Stevens hosted a late-summer / early-fall pilot program during 2011-12 to provide intense exposure to pre-college students in STEM field involving design and innovation in a university environment. This program was partially funded by *NASA* (through private sponsors and participating universities) and it involved the use of a virtual platform to facilitate design (the Pi Tau Sigma chapter advisor was a coordinator along with NASA personnel and private sponsors). Two groups of pre-college students in their junior/senior year were selected based on their STEM aptitude. The students were divided into six groups (each with four or five members per group) and they were given a two week hands-on-training at Stevens in engineering design (that included exposure basic engineering and science concepts and design methodology and design tools). The students were then mentored during a four-week period to complete a STEM design challenge of relevance to NASA (involving a mission to Design An Autonomous Vehicle for Mars Exploration) using a virtual design platform that facilitated effective collaboration. During early fall the twelve groups of students presented their conceptual designs in an open forum at Stevens. This pilot event was also highly successful and has the potential for continued implementation (subject to availability of funds and sponsorship).

The Stevens Phi Omicron chapter again assisted the Mechanical Engineering Department with the open house for accepted students, which was hosted by Stevens on Sunday, April 22, 2012. In addition to volunteering their time for the various laboratory tours and for interactions with the students and parents, the award winning senior capstone design project "Energy Efficient Vehicle for the Shell Eco-marathon" was displayed by Stevens Rawson. (The Stevens prototype shown above successfully competed and was placed 15th in the Battery-Electric category of the 2012 Shell Eco-marathon America).

Stevens celebrated the Research & Innovation accomplishments and the successful completion of the Engineering Capstone Design of its graduating class on April 25, 2012. The Stevens Phi Omicron chapter assisted the Mechanical Engineering Department with the set up for the event and the distribution of ASME literature. Various capstone design projects were on display and they included the following from the Pi Tau Sigma members.

- SAE Advanced Class Cargo Plane (Andy Moy & Alexander Mukhanov)
- Formula SAE Car (Dominic Catalano & Joshua Skole)
- Energy Efficient Vehicle for the Shell Eco-marathon (Steven Rawson)
- Castle Pont Co-Generation (Samantha Biscottini, David Carlson & Andrew Verderame)

- Acoustic Energy Harvesting Device (Thomas MacKinnon)
- Therapeutic Toy for Children with Disabilities (Kendra Appleheimer)
- Design of a Hybrid Photovoltaic/Thermal (PV/T) Energy System for Residential Applications (Nur Athirah Ishar & Nur Najihah Mahmood)
- Micro-robotic Environmental Chamber (Yang Park)
- Mechanical Oscillator for Ice Adhesion Testing (Sara Pacella)
- Product Line Vertical Lift Unit (Stevens Moss)
- Noise Suppression Highway Barrier Tip (Jesus Ramirez)
- Design of knee implant extraction device (Christina Alecci)
- DoD Advanced Expeditionary Housing (Matthew Gelmetti)

In addition, as part of social outreach, several members of the chapter again participated in the collection of food and clothing for the needy and the Hoboken shelter during the holiday period.

Ms. Samantha Biscottini (chapter vice president) represented Stevens in the Pi Tau Sigma National conference at the San Jose State University, San Jose, CA (during March 2-4).

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

Graduates

Alecci, Christina M.	Appleheimer, Kendra L.
Biscottini, Samantha L.	Carlson, David W.
Catalano, Dominic V.	Gelmetti, Matthew A.
Ishar, Nur Athirah	Kotz, Andrew J.
MacKinnon, Thomas J.	Mahmood, Nur Najihah
McCormick, Ryan M.	Moss, Steven
Moy, Andy	Mukhanov, Alexander O.
Pacella, Sara E.	Park, Yang B.
Ramirez, Jesus	Rawson, Steven J.
Skole, Joshua	Verderame, Andrew A.

Awards & Recognition

Several of the Stevens Phi Omicron chapter members from the 2012 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.

- **Andrew Verderame** was the 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.
- **Samantha Biscottini and Christina Alecci** were the recipients of the *Richard B. Cole Award* for demonstrating high academic performance, integrity, and personal dedication.

- **Thomas Mackinnon** received the *Arthur J. Grymes award* for demonstrating greatest interest and proficiency in fluid mechanics.
- **Alexander Mukhanov** was the recipient of the *Elie Fonrose Award* for his promise of advancement in the field of aerospace engineering.
- **Joshua Skole** received the *Kenneth J. Moser Award* in recognition of his outstanding performance in heat transfer.
- **David Carlson** received the *Col. John Stevens Power and Energy Systems Award* for being the outstanding student of Power and Energy Systems.
- **Andrew Kotz** was the recipient of the *Fernando Sisto Award* for his outstanding performance in Turbomachinery and Aerospace.
- **Kendra Appleheimer** was the recipient of the *Richard S. Magee Excellence Award* for demonstrating both extracurricular involvement and leadership in departmental and campus activities.
- **Steven Rawson** was a member of the design team that received the *Senior Design Project Award* for outstanding capstone design project in Mechanical Engineering.

The following chapter members of the graduating class were recognized for their academic excellence and their participation in campus activities.

- **Andrew Verderame** was the recipient of *Eastern College Athletic Conference Robbins Scholar Athlete Award* for excelling in Academics and Athletics.
- **Kendra Appleheimer** received the *Podolsky Award* for her unselfish efforts to foster the school spirit and advancing the coed involvement in campus life.
- **Thomas Mackinnon** was a co-recipient of the *Thomas E. McCandless Music Award* for his contribution of time and talent in advancing Music at Stevens.
- **Alexander Mukhanov** was a co-recipient of the *Career Development Award—Service to Department* for volunteering a significant amount of time in sharing his career development experiences with younger students, inspiring others to engage in Career Center activities, and representing the department to the community at large.

Kendra Appleheimer, Samantha Biscottini, Matthew Gelmetti, Yang Bae Park, Steven Rawson, Joshua Skole and Andrew Verderame received both a Bachelors degree in Mechanical Engineering with High Honors as well as a Master of Engineering Degree.

Kendra Appleheimer was also elected as an alumni trustee of the Stevens Board, an honor normally reserved for person of the graduating class with outstanding academic record and who had made significant contributions to advance Stevens during their academic career.

The following members of the Stevens Pi Tau Sigma chapter graduating class of 2012 were also members of Tau Beta Pi: Kendra Appleheimer, Samantha Biscottini, Matthew Gelmetti, Thomas MacKinnon, Thomas McMenamin, Steven Rawson and Peter Supernavage. Kendra Appleheimer was elected to be the Recording Secretary of the New Jersey Alpha Chapter of Tau Beta Pi for 2011-12 academic year.

At the state level, **Christina Alecci, Kendra Appleheimer and Samantha Biscottini** 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 in a state-wide *NASA New Jersey Space Grant* meeting (at Rutgers University) to highlight their work.

William J. Robbins was among one of eight recipients of the State-wide *NASA New Jersey Space Grant Fellowship* (open to students from all New Jersey Institutions of Higher Education). The fellowship covers a ten-week period where the each student is mentored in a research project of aerospace relevance and it culminates in *NASA New Jersey Space Grant Summer Fellowship Conference* (at Rutgers University) where each student will present their work.

Plans for 2012-2013

Our plans for the upcoming year consist of educational, social, and outreach activities. Among others, it will include participation in the Stevens Innovation and Entrepreneurship program, sponsorship of engineering seminars, co-sponsorship and participation in professional society student chapter activities, as well as the 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:	Jesus Ramirez
Vice President:	Samantha L. Biscottini
Secretary-Treasurer:	Christina M. Alecci
President Elect:	Philip A. Clark
Vice President Elect:	Lindsay R. Crossan
Secretary-Treasurer Elect:	Aaron M. Perelman

The elections for the chapter officers were held on April 30, 2012 following the initiation ceremony. The current group of officers explained the responsibilities and chapter activities to the officers-elect who will govern during the 2012-13 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