**PI TAU SIGMA ANNUAL CHAPTER REPORT**
**2012-2013**
**Illinois Alpha**

## I. Initiation

### A. Selection and Recruitment Process

The Illinois Alpha Chapter requires candidates to have obtained a minimum of 60 credit hours towards their Mechanical Engineering degree, while simultaneously maintaining a minimum 3.5 GPA on a 4.0 scale. The Mechanical Science and Engineering Department (the Department) sends an invitation, written by the chapter president, at the beginning of each semester to those candidates that meet the above requirements. The invitation is to an introductory meeting where the society leaders – the executive board, chairs, and project leaders, introduce themselves and what the society does. Additionally, the process for initiation is spelled out. Our chapter has received interest from graduate students in joining the society, and we are working to formalize their initiation in accordance with the Constitution of Pi Tau Sigma.

### B. Initiation Requirements

Our chapter believes that it is in our initiates' best interests to become actively involved in society events and initiatives. As a result of this belief, we require a high level of participation throughout the initiation semester in order for candidates to be a part of the end-of-semester ceremony, described in the next section. To measure participation, point values are assigned for every event, in one of three categories: Social, Service, and Meetings. Each individual category has a minimum number of points that must be obtained, and a cumulative number of points is also required. There is some flexibility to the requirements on an as-needed basis – graduate students or students that work part-time are good examples of this. Graduate students'

Spring 2013 Initiates

research is eligible for project points, helping to minimize some of the required time commitment. At the end of the semester, a $50 lifetime membership fee is required of all initiates to cover the expenses of national registration as well as the cost of the ceremony. Attendance is mandatory at this occasion, with exceptions being made for students with exams. A separate initiation ceremony is held for these students.

**C.** Initiation Ceremony

Our initiation typically is during the last two weeks of the semester before finals. This year's ceremonies occurred on December 6, 2012 and April 25, 2013. In the fall, 17 new members were inducted into the society. The spring initiation ceremony welcomed 28 new members. Our initiation is a formal affair, and we require business professional attire for all present. Initiates are led into a dimly lit room and are instructed to stand at the front of the room. The executive board then reads aloud to the initiates the code of ethics that Pi Tau Sigma strives to uphold, asking for individual pledges from initiates that they will also work to uphold them. The Pi Tau Sigma coat of arms and emblem are then introduced, with the rationale behind each being given. At the end, initiate's names are read, they are taught the Pi Tau Sigma handshake, and are given a Pi Tau Sigma pin, pencil, and t-shirt. This year, we took the fall initiates out to Olive Garden and catered a meal in during the spring.

Fall 2012 Initiation Ceremony

## II. Chapter Activities

**A.** Fundraising

Giving back to the community is one of Pi Tau Sigma's founding principles, and we place a heavy emphasis upon fundraising for charity in order to fulfill that.

*Relay for Life Barbecues*

Our barbecues are the longest-standing fundraiser for our chapter. Each semester, we reserve space for four days, over two weeks, to raise money for Relay for Life. These barbecues take place on the Engineering campus, and are open to anyone who walks by. We sell hamburgers, bratwurst, and hot dogs, as well as soda, water, and chips. Both initiates and members are asked to help staff the grill and tables during these events. This year, our Relay barbecues alone raised $1180 for the American Cancer Society. Including the restaurant fundraisers below, we were able to raise $1350 for Relay for Life this year.

*Restaurant Fundraisers*
Restaurants around campus town will support organizations with a percentage of proceeds from a given night or with presentation of a flyer upon ordering. This year, Noodles and Company partnered with us and together we were able to raise $140. Additionally, we partnered with Rice Garden and were able to raise an additional $30. The proceeds from both of the fundraisers went to support Relay for Life.

*Mark Shannon 4-on-4 Soccer Tournament*
This year marked the inaugural Mark Shannon 4-on-4 Soccer Tournament. Dr. Shannon was a faculty member of the Department at UIUC. He was an incredibly dedicated teacher and advisor, but for the last several years, he had been handicapped by ALS, or Lou Gehrig's disease. Unfortunately, Dr. Shannon lost his battle with ALS in 2012. To honor and remember him, our chapter hosted a campus-wide event to raise money for the ALSA. For the first year, we were incredibly pleased with the results – over 20 teams participated in the tournament. We charged a $10/person registration fee that included a t-shirt, food, drinks, and a DJ at the event, and were able to raise $270 for the ALSA. This event we hope to continue well into the future.

PTS and Friends at the Soccer Tournament

**B.** Service
Another one of the ways that we give back to our community is by serving it with our time, not just our money.

*Food Drives*
This year we continued to do our semester food drives – in the fall and spring we were able to donate 130 and 80 pounds of food, respectively. Our fall food drive took place around Thanksgiving, and during our spring food drive we were actually able to form a competition against Purdue Beta. The result of the competition was a draw, due to very different schemes of donation, but it was a lot of fun, and we hope to continue to leverage our relationships with other chapters to increase inter-chapter participation as well as some friendly rivalries!

*Booker T. Washington Technology & Engineering Club*

This year marked the first full year of the afterschool club at the local STEM academy. STEM initiatives are ubiquitous across the nation, and it was a very valuable experience for our members to work with the K-5th graders at Booker T. Washington and see the energy and excitement that they have for the topics presented. Over the course of the year, 60 K-5th grade students participated in the club. The structure of the club this year consisted of two, separate, eight-week sessions, one each in the fall and spring. In cooperation with the STEM advisor at the school, we developed a curriculum we think to be a good entry-level discussion of what engineers do in today's world, with hands-on activities to explain concepts discussed. Throughout each session, emphasis was placed upon design and iteration of proven examples. In the fall, the topics covered were conductivity, jet power, chemistry, sound energy, structures, earthquakes, magnetism, and motors. Each of these topics was introduced with a short, 5-10 minute presentation of the basics of the topic, and then a 40-50 minute, hands-on activity. In the spring we learned from the fall curriculum, made a few changes, and added a new activity: wind power. The hands-down favorite of the year was the Jet Toy, a balloon powered car that the students were able to build and take home. We will continue our involvement with Booker T. Washington into the future, and are excited to be a part of such a valuable initiative.

PTS Member Helping a Student Build a Domino Structure

Additionally, during the spring our members hosted five separate exhibits during the Booker T. Washington Family Engineering Night, where parents come in with their children and do activities together. Activities included: building catapults, "mining" cookies for chocolate chips, building a prosthetic hand, and several others.

*Children's Museum Volunteering*

In the Champaign-Urbana area, the Orpheum Children's Museum serves the community in providing an exciting place for children to explore and play. The Orpheum went under an extensive cleaning this year, and Illinois Alpha was there to help. During a spring Saturday, several members went to the museum to scrape floors, sweep, and vacuum the space before exhibits were reinstalled. Additionally, during the fall we sent several more members to aid in the set-up and construction of the Orpheum's annual Halloween exhibit. Over the course of the year, more than ten members contributed significant portions of their weekends to serve this great cause.

*Other*
Our members also participated in this year's Campus Clean-Up, a day of service where students from across the University get together to clean up the campus and the surrounding community.

**C.** Departmental Involvement
As the honors society within the Department, we believe that it's important to participate in new initiatives and help to provide feedback to the Department on new initiatives or events.

*MechSE Forum*
The Forum is in its 5th year. It is an annual event, hosted by Pi Tau Sigma, that brings together undergraduate and graduate students, and the Department administration, as well as several members of the Faculty. In attendance this year were the Department Head, undergraduate head, graduate head, and a teaching member of the faculty. The purpose of the Forum is to allow for an open discussion of curriculum, facilities, and the general state of the Department. The event has become very popular in recent years, and this year over 50 students were in attendance. In recent years, discussions had during the Forum have been implemented, including new lighting in student workspaces, curriculum supplements, and moderate curriculum changes. This year, the forum revolved around a several issues, the most significant being the structure of our year-long Senior Design class that students can elect to take. The Department started the initiative two years ago, and it is still largely a work in progress, and students gave feedback on how it can continue to be improved, with favorable responses from the administration. Additionally, the structure of laboratory courses, specifically in regards to the coding requirements necessary was discussed, with students asking for more skills-based coding assignments and practice throughout their student career to better prepare them for one in industry.

*MechSE Volleyball Tournament*
Now in its sixth year, the volleyball tournament is an annual event, hosted by Pi Tau Sigma, that brings together undergraduates, graduate students, as well as faculty in a friendly, social environment. Students are encouraged to form teams with friends, research groups, or can be placed on a team by the organizers. This year, ten teams participated.

*Student Society Luncheons/Undergraduate Advisory Board*
Each month of the year, the president and/or vice president meets with the director of undergraduate programs, Department staff, and leaders from other student societies such as ASME and Engineers without Borders. These luncheons are a place where more continuous feedback throughout the year can be asked for and acted upon by the Department. It also serves as a platform for student societies to inform the Department of significant events going on with their students, as well as enlist the support of other societies in hosting events, advertising, and general planning. This year, the luncheons began to shift to an Undergraduate Advisory Board that occasionally will meet without the Department present to discuss new initiatives and

propose ideas that students may be nervous about presenting directly to the Department.

**D.** Projects

Our chapter believes that hands-on experience is one of the best ways to learn, and so each year we invest in projects that we believe teach valuable engineering lessons, with the added bonus that during our annual Engineering Open House, we are able to promote interest in Mechanical Engineering to young students. We were pleased to be notified by the Department that our exhibits earned us second place overall during the weekend.

*Sandcasting*

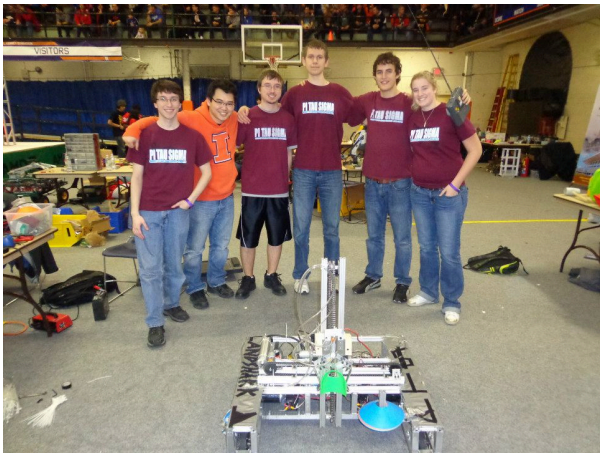
One of our longest-standing projects, sandcasting is a primarily EOH-focused exhibit, and is very popular at that event. This year it was also featured in the fall MechSE Open House for prospective freshmen. For the exhibit itself, our students will explain each step of the process – from packing the mold, cutting the sprue, pouring the aluminum, all the way to separating the mold and quenching the cast part. Visitors to the exhibit all get to take home a souvenir part, and this year – in light of an increased desire to pursue women for mechanical engineering, we developed a new part: a flower. This brought the total options for students to four – a dinosaur, a car, the flower, and a star.

*Design Project*

This year we pursued a new design project – developing a test stand to measure the magnitude of the Magnus Effect, and explained it using the concept of a curveball. Through the use of several micro-motors, force sensors, as well as the use of a wind tunnel, we were able to show visitors how the lateral force increased with greater wind velocity as well as a higher rpm. Many visitors were very intrigued by this, and we received very positive feedback from some visiting professors.

*Jerry Sanders Robotics Competition*

Now in its fourth year, our robotics team built a robot to compete in the Jerry Sanders competition during Engineering Open House. This year's objective was to manipulate plastic cones from the floor into a hanging position along rods placed throughout the course. In a king-of-the-hill environment, several portions of the course were contact zones, which made for interesting viewing. Our team did very well, scoring the second-most number of points for the weekend, although did not podium due to a bad fall in the semi-finals. The team did, however,




The Jerry Sanders Team with the PTS Landshark Robot

produce a brand-new, modular chassis this year – minimizing the work that will be required next year, as only the mechanism will need to be re-designed.

*Hexapods*
This year marked the last year our chapter will exhibit these six-legged, spider-like robots. After performing tremendously well for the past six or seven years, they are a little bit too beaten up to continue serving reliably. We yet again re-designed the track, this year combining the LEGO Mindstorms into the exhibit and making a 2v2 race the objective, where both a hexapod and a Mindstorm had to work together to complete the course. Next year's alternative to the Hexapods will be a Mindstorm-only exhibit, and we are excited at what is possible with these versatile robots.

**E.** Social Events
Our chapter has always found it valuable for members to develop significant relationships with each other outside of the normal school day. To fulfill this, we host many social events throughout the year.

*Happy Hours*
We have happy hours the Friday following our general meetings, generally every other week. These events are a great opportunity for members to interact in a very laidback environment and to wind down at the end of a week. We regularly record over 25 people in attendance, and food is provided for all. These are our most well attended social events, other than our bar crawl that occurs each semester.

Members Enjoying a Friday Happy Hour

*Initiate Social*
This spring marked the first initiate social ever, where we invited each of the people who received an invitation and attended our initiate meeting to join us for dinner at a local restaurant. Being the first year, it is hard to gauge the impact of this event, but we recorded one of our largest initiate classes ever, so it seems to be working! This event brought together the executive board and all of the new initiates, as we felt it beneficial to meet them one on one and develop personal relationships with all of the initiates. Feedback has been unanimously positive, and we will continue this event every semester moving forward.

*Alumni Events*

This year we continued our focus on maintaining relationships with our alumni. With the formation of the Illinois Alpha Alumni Chapter, it has given us a great place to disseminate information about upcoming events that the alumni can join us for. In the fall, we organized another alumni tailgate and were pleased to have over 50 people attend. We hope this event will continue to gain momentum with another class of graduates joining the ranks of our alumni chapter this spring. In the spring, a happy hour was organized between the alumni and the student members during Engineering Open House, which brought together five alumni and 20 current members. We will continue to work on developing alumni events throughout the years to come, and are excited to have an alumni association that will make it that much easier.

Members and Alumni at the Homecoming Game

*Wallyball*

This year, our social chair really wanted to come up with something that would be a different setting for our membership to get to know one another, so we played wallyball several times during the semester at our Activities and Recreation Center. It's a very affordable way to promote relationships among members, and with a little bit of competition thrown in everyone had a great time.

*White Sox Game*

In the spring, 15 of our members traveled north from Champaign to watch the Chicago White Sox play the Seattle Mariners. It was a great trip, despite the weather (cold and windy). We were able to get a very diverse group to go, with several initiates, several executive board members, and some active members as well.

Members Enjoying a White Sox Win

*Other Activities*

While not as planned as the rest of our social calendar, this year also saw the Alpha chapter

attending hockey and baseball games, getting together to watch the Blackhawks and Bears play, and other impromptu events.

## III. Chapter Business

**A.** General Meetings

During the semester, we typically hold a general meeting every other week. These meetings ensure that as a society everyone is aware of upcoming events and service, as well as give students the opportunity to hear from different speakers about opportunities that exist for Mechanical Engineers in industry or in academic research. Initiates are required to attend a minimum of four meetings, with class and/or exam conflicts being accounted for. This year we focused on bringing in corporate speakers that would speak about things other than their company, such as career development, networking, strategy, or just the nuts and bolts of a career engineer. This year we had speakers from Caterpillar, Navistar, Armstrong Forensic Engineering, IMI Cornelius, as well as the CEO of AAR Corp, David Storch. We also invited our engineering career services staff to come speak about the power of LinkedIn and how students can use it to their advantage during the job search. One of the more exciting things that happened with these meetings is that when IMI Cornelius came to speak, one of our alumni came with, David Joyce, and was able to speak about the beverage dispensing industry. The icing on the cake was that a few days after the meeting, they sent our chapter an email indicating they had convinced upper management to start an intern program, and one of our members is serving as their first-ever intern!

PTS Members Listen to David Storch, CEO of AAR Corp.

**B.** National Convention

Due to its proximity, this year we were able to send nine members to the national convention in Columbus, OH. It was an exciting time, and I was pleased to send such a diverse group from our chapter. Three members of our executive board, three of our project chairs, and three new members were in attendance, and we made the most of our experience. Our National Convention committee took extensive notes and formed relationships with the OSU hosts as well as the delegation from Texas A&M, who will be hosting next year. We feel very confident about our planning committee and are excited to see the fruits of our labors in the next few years.

Illinois Alpha with Awards in Columbus

**C.** Scholarships

Scholarships are a fantastic way to reward the involvement of active members who do not hold positions on the executive board. Our chapter gives in excess of $1500 in scholarships annually, as we believe it an important part of maintaining a high level of involvement. For each of these awards, nominations are received from the general membership and the executive board then votes to determine the winners. Each spring, at initiation, we announce five different awards. The first is Most Valuable Member, the award given to the person who has contributed the most to the society throughout the year. The second award is the James W. Bayne External Service Award, named for a former professor at UIUC who also served as the national president of Pi Tau Sigma at one time. The recipient is a member who shows great enthusiasm and dedication towards the service activities of the chapter. The Unsung hero award is typically given to a member who holds no leadership position at all in the society and gets no credit for their efforts, but who still works diligently to attend events, help in planning, and generally is an outstanding contributor to the society. Finally, the last two awards are given as Outstanding Initiate Awards, one for each semester.

Two Pi Tau Sigma awards also exist at the Department level: the Pi Tau Sigma Sophomore Award, for an outstanding sophomore in Pi Tau Sigma, and the James W. Bayne Senior Award, for an outstanding senior in Pi Tau Sigma. These award winners are recognized at the spring awards banquet, along with the past year's initiating members.

**D.** Organization

Our chapter is governed by an executive board, comprised of a president, vice president, treasurer, recording secretary, corresponding secretary, historian, and webmaster. The board meets on a weekly basis to ensure that everything is running smoothly with the organization at a high level. The president also meets weekly with the chapter advisor so that they are aware of upcoming events and are informed of any problems with the chapter's operation. Our vice president holds a chair meeting once a week, where the social, service, fundraising, nationals, and projects chairs are all in attendance. These chairs run committees of active members to plan and execute events. Our treasurer ensures that our budget is up-to-date and that the university is processing reimbursements. The corresponding secretary serves as an external contact, setting up speakers and attending our Engineering Council meetings. The recording secretary is responsible for the weekly email that we send, as well as recording points for the events that we host throughout the semester. The webmaster maintains our online presence, including our website, LinkedIn, and Facebook

accounts. The historian takes pictures, maintains our display case, and is in contact with our alumni. All positions run on an academic year cycle, with elections taking place each spring.

For next year, we have made several changes to the executive board structure listed above, so elections looked differently. We now have two vice presidents, one internal and one external, a secretary, treasurer, and the Nationals planner. We made this change in an effort to create a more even distribution of work for the executive board. The external vice president will now oversee general meetings, fundraising, and

The 2012-2013 Executive Board

service, while the internal vice president will oversee social, projects, and other new events. Our secretary has been given a committee that consists of a webmaster and a publicity director to help manage the dissemination of event information and ensure that word is getting out through all available channels about upcoming events. The treasurer's job has stayed the same. The nationals planner was added to the executive board so that as it gets closer, real decisions can be made on the spot, rather than having to go up or down the chain of command. We have also added a nationals correspondent position that has the responsibility of encouraging inter-chapter participation, whether it be friendly competitions, visits to other universities, or something else entirely.

## IV. Other

For other questions, please visit our website, at www.pitausigma.mechse.illinois.edu, or email us at ptsillinoisalpha@gmail.com.