# PI TAU SIGMA ANNUAL CHAPTER REPORT
# 2013-2014 Illinois Alpha

## I. Initiation

### 1. 1. Selection and Recruitment Process

The Illinois Alpha Chapter requires candidates to have obtained a minimum of 60 credit hours towards their Mechanical Engineering degree, typically a junior standing, while simultaneously maintaining a minimum 3.5 GPA on a 4.0 scale. The Mechanical Science and Engineering 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 requirements for initiation is introduced. 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.

### 1. 2. Initiation Requirements

Our chapter believes that it is in our initiates' best interests to become actively involved in society events. As a result of this belief, we require a high level of participation throughout the initiation semester in order for candidates to be initiated into a member of the society, 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. Participating in committee and doing projects can help members to earn points as well. At the end of the semester, a $50 one-time membership fee is required of all initiates to cover the expenses of national registration as well as the cost of the ceremony.

### 1. 3. Initiation Ceremony

Attendance at the initiation ceremony is required. The ceremony is typically hosted during the last two weeks of each semester before finals. This year's ceremonies were hosted on December 11, 2013 and May 7, 2014. 12 new members were inducted into the society in the fall. 19 new members were inducted into the society in the spring. Our initiation is a formal affair. Business professional attires are required for all the participants. During the ceremony, initiates are led into a dimly lit room and are instructed to stand at the front of the room. The executive board then get turn introducing 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 initiates out to Olive Garden for formal dinners after both ceremonies.

## II. Chapter Activities

1. 1. Fundraising

Raising money for charity has been part of the tradition of out chapter. Each year, our chapter raises money for Relay for Life through the American Cancer Society, supporting both cancer research and care for current patients and families. As usual, we barbecue on the engineering quad four times a semester in support of this cause. In this spring semester, we barbecued 5 days in two weeks, adding one extra day than usual. This helped us to raise more money. In these barbecues, we sell brats, hamburgers, hot dogs, cheeseburgers, chips, and drinks at a low cost.

Grilled cheese was introduced as a new option for vegetarians. Initiates and members staff the grill as well as assist in collecting money and serving customers. Through these barbecues and individual donations we raised over $1500 towards the American Cancer Society.

2. Service

## *Booker T. Washington Technology & Engineering Club*

This year marked another full year of the afterschool engineering club at the local STEM academy. After the success from last year, we were invited by the BTW academy to run their afterschool engineering club again this year. The program was so popular that there were more people signed up than what we could offer. As sa result, the afterschool program was break into two programs this year, one for k- 2$^{nd}$ graders and the other for 3$^{rd}$ – 5$^{th}$graders. PTS was asked to take charge of the K-2$^{nd}$ program. It was a very valuable experience for our members to work with the K-2$^{th}$graders and see the energy and excitement that they have for the topics presented. Over the course of the year, 40 K-2$^{th}$ grade students participated in the club. The structure of the club this year consisted of two, separate, eight-week sessions, one for each in both fall and spring. In cooperation with the STEM advisor at BTW academy as well as Joe in the MechSE department, we developed a curriculum that contains plenty of hands-on activities, in order to explain concepts discussed. Throughout each session, emphasis was placed upon design and iteration of proven examples. The topics covered included conductivity, jet power, chemistry, sound energy, structures, earthquakes, magnetism, wind power and motors. Each of these topics was introduced with a short, 10 -15 minute presentation of the basics of the topic, and then a 30 - 40 minute, hands-on activity. PTS has received a few service awards from our department due to our involvement with the engineering club. A few reports can be found on the department newsletter regarding our events. We will continue our involvement with Booker T. Washington into the future, and are excited to be a part of such a valuable initiative.

## *Family Engineering Night*

Family Engineering Night was like an extended version of afterschool engineering club. It took place once every semester. Besides the students, more than 100 parents participated in this event. There were six different activities happening at the same time run by PTS members. Families were broken down into six groups and they could pick which activities to participate. Each of the activities would take about 25 minutes. The engineering night would last for 2 hours. Most families could participate in at least 4 activities. The Engineering

Family Night that we hosted in the fall semester was extremely successful. Both students and parents loved it. As a result, Booker T Washington Academy had us back for another one in the spring semester. In addition, it was so popular that two more elementary schools in the region asked if PTS could reach out and host one for their students. Unfortunately, we have had a tight schedule this semester and we wouldn't have extra manpower to run it, therefore we were no able to reach out. However, with early preparation for the next year, we would be able to set up more of those events to serve our local students and community.

### *Food Drives*

This year we continued to do our food drives. We had some food cans collected at the end of the fall semester as well as the end of the spring semester. Our food drive took place around the final week in the spring semester. In the future, we hope to set up a friendly competition with other chapters in the region on the food drive to increase inter-chapter participation as well as some friendly rivalries!

## 3.Departmental Involvement

As the honor 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 6$^{th}$ year. It is an annual event, hosted by Pi Tau Sigma, which brings together undergraduate and graduate students, and the Department administrators, as well as several members of the Faculty. In attendance this year were the Department Head, undergraduate head, graduate head and a 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 40 students were in attendance. In recent years, discussions had during the Forum have been implemented, including new lighting in student workspaces, new card access at the east side of MEL, curriculum changes and new project workshop. This year, the forum revolved around a several issues, the most significant being the changes of ME370/371 curriculums. Lots of hands-on projects have been added to those two classes. A student project workshop has been built in accommodate to these changes. Desktop 3D printers and laser cutters are offered to the students for project purposes. Hands-on projects can largely improve students' ability to deal with real life engineering problems and will better prepare them for their jobs.

### *MechSE Volleyball Tournament*

Now in its seventh 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, eight teams participated. The whole tournament lasted for three hour on a Saturday afternoon. All the food and drinks are provided for free to all the players.

### *Student Society Luncheons/Undergraduate Advisory Board*

Each month of the year, the president or the vice president meets with the director of undergraduate programs, Department staff, and leaders from other student societies such as ASME and SAE. 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.

## 4. Projects

We believes that hands-on projects can teach us how to deal with real life engineering problems, and so each year our chapter invest in projects that we believe teach valuable 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 sand casting exhibition earned us a third place award in creativity this year.

### *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 as well as the summer girl engineering camp. Our students will explain each step of the process – from packing the mold, cutting the sprue, melting and pouring the aluminum, all the way to separating the mold and quenching the cast part. Visitors can even get their hands dirty in the sand and make their own mold and part, and they get to

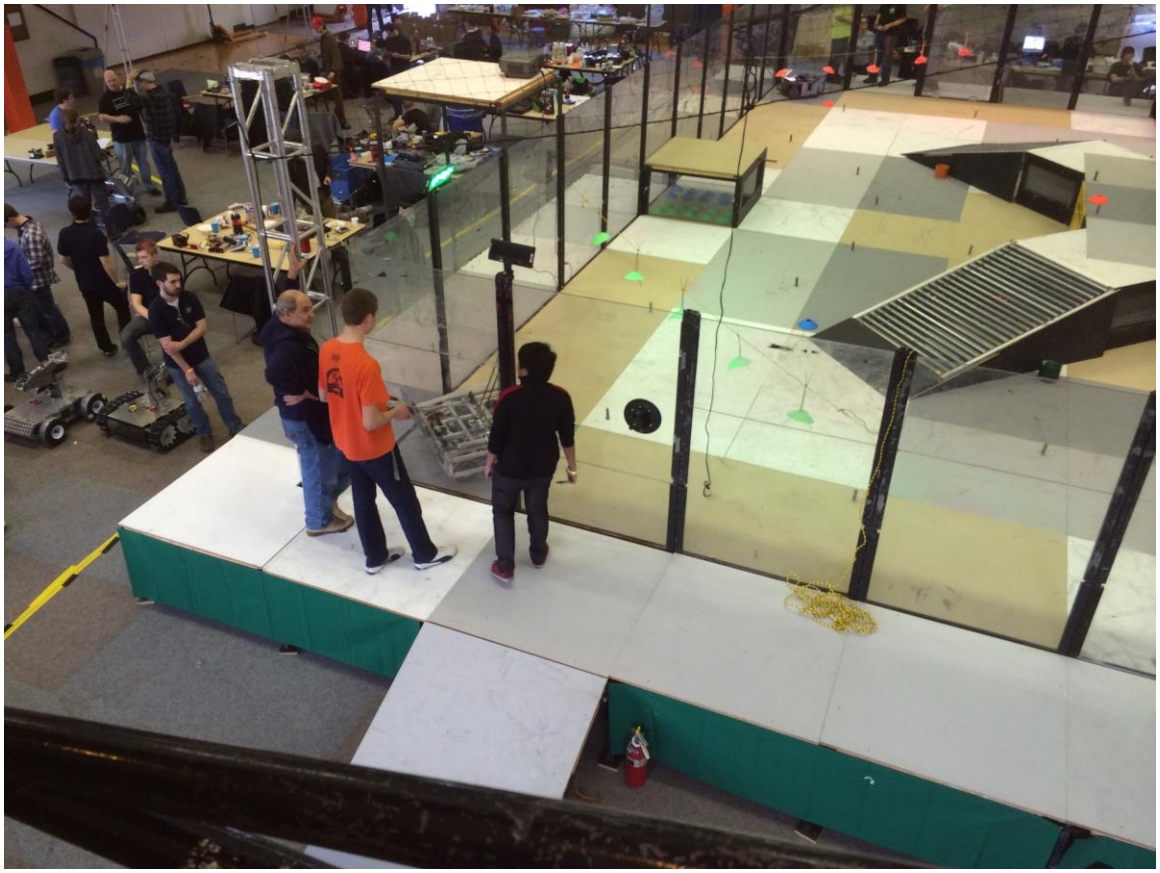
take home a souvenir part. There are totally four molds in our collection – a dinosaur, a car, the flower, and a star.

## *Design Project*

Every year, we start a new idea for our design project team and they will design and build it. This year, our idea was to build a T-shirt cannon. Originally we were going to use PVC pipe to make the barrel of the cannon, though we decided to use metal later on for safety concerning. It took us quite a while to find a metal barrel with a diameter of half feet without exceeding our budget. With metal barrel and metal tank, our gun was extremely secure. Compressed CO2 was used for powering. With a good shooting angle, the T-shirt could be shot as far as 100 yards. The cannon was exhibited during EOH, and it was extremely popular especially among boy visitors.

## *Jerry Sanders Robotics Competition*

Now in its fifth 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 fairly well, scoring the second-most number of points in the first game and the third- most number of points in the second game. We were planning to build a brand new robot next year with a new designs and new parts will be purchased.



## *LEGO Mindstorm*

This year marked the first year that we started running LEGO Mindstorm during the Engineering Open House, replacing the Hexapods exhibition. We assembled the robots following the instruction and controlled them through smart phones. We had a stage set up for the EOH exhibition. Kids could push a ball around on the stage with their robots. Some kids enjoyed having two robots combat against each other. They had their robots push against each other while waving the arm attached to the front of the robot for attacking.

5. Social Events

Our chapter has always found it valuable for members to develop significant relationships with each other outside of the classroom. To fulfill this, we organize many social events throughout the year.

## *Happy Hours*

We have happy hours the Friday following our general meetings. This semester, we had nine happy hours. These events are great opportunities for members to interact in a very laidback environment and to wind down at the end of a week. We regularly record over 20 people in attendance, and snakes are provided for all. These are our most popular social events, other than our bar crawl that occurs each semester

## *Initiate Only Dinner*

We kept our initiate only dinner idea from last semester. It seemed like initiates liked this event a lot. Initiate only dinner 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. Some of them said that it encouraged them to participate in more PTS activities.

## *Biweekly Casual Lunch*

A lot of us have a busy schedule. It’s sometimes hard to spare one extra hour to hang out with other PTS members. Due to the success of initiate only dinner, we

had this new idea to run a biweekly casual lunch for all the members since everyone goes to lunch between their classes anyway. It provided a laidback setting for members and friends to have lunch together. This network opportunity can provide a chance to members to catch up with each other in the middle of a week.

### *Pickup Basketball Games*

A lot of PTS members are sports fans, and some of them enjoy playing sport. With a strong request to organize basketball pickup games, we started to play basketball on Saturday mornings. The turn out were pretty good in a few games, one of which we had more than ten members showed. For the next semester, we were planning to have monthly sport event such as pick up basketball, volleyball and soccer games.

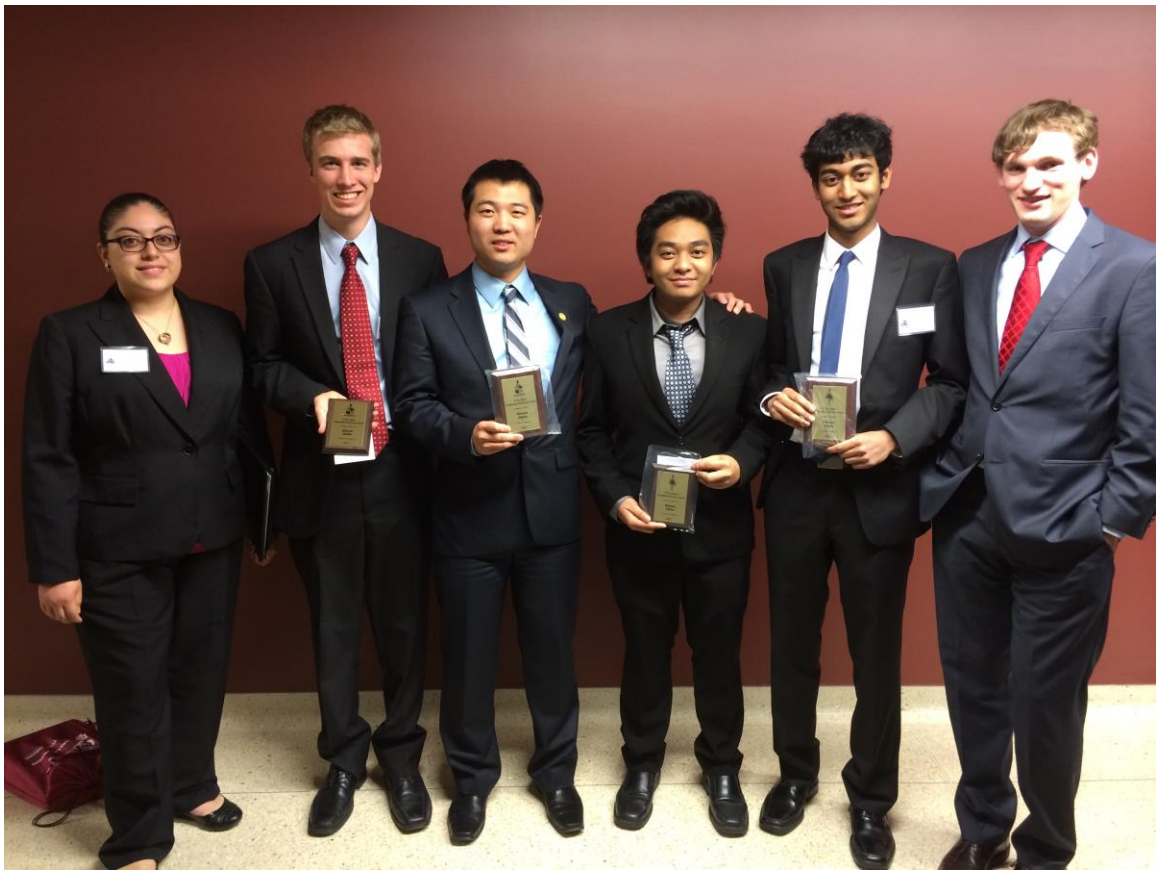
## III. Chapter Business

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 life of a career engineer. The engineering career services also gave us a workshop before the engineering career fair at the beginning of the school year, helping us editing our resumes, practicing our 30-second pitch, as well as discussing common problems. 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 again. They have hired so many PTS interns since they started a internship program last year. Up to date, more than 5 members from our chapter have interned in the program.

B. National Convention

Our chapter is going to host the centennial national convention in spring 2015. We've been preparing the event for a while and still working on it. We have reached out to several companies for sponsorship, as well as our own Mechanical Engineering department. This year, we had 8 students travelled down to Texas A&M campus for the convention, including some boards members and some younger members. It was an exciting time and we made the most of our experience. Our National Convention committee took extensive notes and formed relationships with the Texas A&M hosts. We had conversation with a few other chapters in the region. UIC expressed their interest in helping us to guide visitors from the Chicago O'Hare Airport to our Champaign campus next year. We have learned a lot from the experience at Texas A&M and feel very confident about our own planning committee.



C. Scholarships

Scholarships are a fantastic way to encourage the involvement of active members in the organization and award their dedication. 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 during the general meeting and the executive board then votes to determine the winners. At initiation ceremony at the end of each academic year, 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. This year, this award goes to Julia who has made extraordinary efforts to promote and improve the after school engineering club at the BTW, with the help of Joe. 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. The recipients are selected according to the points that they've gained through out the 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. Society Organization

Our chapter is governed by an executive board, comprised of a president, an external vice president, an internal vice president, a treasurer, a secretary and a national convention chair. The board meets on a weekly basis to ensure that everything is running smoothly with the organization at a high level. The president meets bi-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 typically 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 external vice president serves as an external contact, setting up speakers and attending our Engineering Council meetings. The 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 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. The webmaster under the charge of secretary maintains our online presence, including our website, LinkedIn, and Facebook accounts. The publicity director takes pictures and maintains our display case in mechanical engineering building. Most positions run on an academic year cycle, besides a few positions such as publicity chair, webmaster and national correspondent. Semester-long positions are meant to give new members chances to be more involved in the society and be one-step further on their way to run for a board position. Year- long position elections takes place in the spring, and semester-long position elections takes place at the end of each semester.

## IV. Other

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