**PI TAU SIGMA ANNUAL CHAPTER REPORT**
**2009 – 2010**
**California Pi Omega**

# A. INITIATIONS

## I. Selection Process

Eligibility is extended toward the top third of the senior class in the Mechanical Engineering Department and the top fourth of the junior class, as determined by grade point average (GPA) and number of completed units. The list of eligible students is obtained during the fourth week of the semester. Each student is informed through e-mail about their eligibility. A candidate meeting is held to introduce the eligible students to Pi Tau Sigma. During the past year, the number of candidates in the chapter has grown from previous years. In the fall semester, we had a total of 31 pledges. In the spring semester, we had 22 pledges.

## II. Pledge Requirements

The pledging process has been carefully formulated to develop not only engineering skills, but also to make each pledge a responsible member of the community and an active participant in the group's undertakings. The pledge requirements are based off a unit system, where each pledge is required to accumulate a total of 60 units. The following is the breakdown of the pledge requirements during the spring semester. Units are shown in brackets.

Required Events – *Attend ALL events*:

| | | |
|---|---|---|
| ☐ 3/3 | Pledge Barbecue | [5] |
| ☐ 3/17 | General Meeting 1 | [5] |
| ☐ 4/7 | General Meeting 2 | [5] |
| ☐ 4/21 | General Meeting 3 | [5] |
| ☐ 5/1 | Initiation | [5] |
| ☐ TBA | Big/Little Sibling Event | [1] |

Outreach – *Accumulate 10 units*:

| | |
|---|---|
| ☐ Berkeley Engineers and Mentors | [5] |
| ☐ Discovery Expo | [5] |
| ☐ Engineering for Kids (E4K) | [5] |
| ☐ Pioneers in Engineering (PiE) | [5] |
| ☐ Mini University | [5] |

Social Activities – *Accumulate 15 units*:

| | | |
|---|---|---|
| ☐ 3/9 | Bowling with Giorgio | [5] |
| ☐ 3/29 | Ultimate Frisbee Spectating | [5] |
| ☐ 4/1 | Game Night | [5] |
| ☐ 4/3 | March Madness Day | [5] |
| ☐ 4/6 | Fenton's Ice Cream Social | [10] |
| ☐ 4/10 | Driving Range | [5] |
| ☐ 4/13 | Bowling with Giorgio | [5] |
| ☐ 4/16 | Rock Climbing | [10] |
| ☐ 4/18 | Sailing | [5] |
| ☐ 4/23 | Movie Night | [5] |
| ☐ 4/25 | Archery | [10] |

Pledge Project – *7 units*:
☐ Exercise design skills and apply theoretical concepts by building a Rube Goldberg machine
☐ Film your machine in action: the team with the best machine wins a prize

Required Submissions – *2 units*:
☐ Resume [1]
☐ Three Electronic Copies of Exams [1]

## III. Pledge Projects

The pledge project requirement is an excellent way for the pledges to demonstrate their mechanical engineering skills. Pledges are separated into four teams, each of which is tasked to build a semester-long project. In the fall semester, the project is an egg launcher. In the spring, the teams built a Rube Goldberg machine. The task accomplished by the machine and its engineering theme are decided by the teams themselves. The projects are judged based on aesthetics, creativity, craftsmanship and presentation.

**The winner of the spring pledge project is the breakfast Rube Goldberg machine, capable of serving cereal, toast and orange juice.**

At the start of initiation day, a pledge project competition judged by the chapter's project officers is held on campus. The team with the best project and the most creative YouTube video wins a prize.

Videos of all the pledge projects in action can be found in the chapter's YouTube channel, www.youtube.com/user/PiTauSigmaBerkeley.

## IV. Initiation Day Ceremony, Rituals and Celebration

MATLAB Scavenger Hunt

The fall semester of 2009 marked the first use of MATLAB as part of our scavenger hunt in the initiation process. Seven stations with computers were set up inside Etcheverry Hall, the mechanical engineering building. Questions about Pi Tau Sigma and its history are presented in each MATLAB code that the initiates would have to solve. Clues are then given for the location of a different station. The culminating clue in the final station leads to the ceremony room.

Ceremony, Elections and Banquet

In the ceremony, initiates are officially welcomed into the Pi Tau Sigma California Pi Omega Chapter. Immediately after the ceremony, the new chapter officers were elected. There were 27 officers in the fall semester, and 31 in the spring semester. At the end of the initiation day, the chapter held a dinner banquet where we celebrated the successful semester. We socialized with our new members and said our goodbyes to our current graduates, presenting each of them with a Pi Tau Sigma stole used for the commencement ceremony. In the process, "Officer of the Semester" award is given to the officer who has shown the most dedication to the chapter.

The Fall 2009 initiation was held on December 5, 2009. The Spring 2010 initiation ceremony was on May 1, 2010.

## B. CHAPTER ACTIVITIES

### I. Industry/Corporate Relations

#### a. The Pi Tau Sigma Industry Seminar

In the Spring 2010 semester, the chapter organized and hosted a weekly mechanical engineering industry seminar. This seminar is a collaboration between the Berkeley Mechanical Engineering Department and the Center for Entrepreneurship and Technology. Professionals from mechanical engineering-related companies presented their latest projects, company background, and industry trends. Speakers represented a variety of fields, including automotive, biomechanics, venture capital, and design. The seminar was organized and run by the chapter's industrial officers. They coordinated with the department so that each speaker could meet with the department chair or vice chair before speaking. After each seminar, students were given the opportunity to ask the speakers questions.

The speakers were found by asking the mechanical engineering faculty for industry connections to colleagues and former students. Many of the speakers were Cal Alumni and had personal advice for the undergraduate student audience. The seminar was offered as a one unit class and had a total enrollment of forty five students, although additional students would sit in for speakers of interest. Officers recorded enrollment by posting an online weekly quiz the day following each seminar.

The class syllabus and details can be found at the following website:
http://www.me.berkeley.edu/ME198_56058/industry.

The seminar had speakers from the following companies:

- **Applied Materials** – Nir Merry, *Managing* Director
- **Moog Industrial Group** – Michiel Post van der Molen, *Site Manager*
- **IDEO** – Dave Blakely, *Senior Director*
- **National Instruments** – Zach Nelson, *Academic Field Engineer Group Manager*
- **UC Berkeley Corporate Foundation and Relations** – Barbara Blackford, *Director of Corporate and Founding Relations of the College of Engineering*
- **Volkswagen** – Prasanth Jeevan, *Software Developer* & Charles Lee, *Research Engineer*
- **Lawrence Livermore National Lab** – Robert Rudd, *Physicist*
- **National Semiconductors** – Matthew Senesky, *Staff Circuit Design Engineer*
- **Spinal Kinetics** – Elisa Bass, *Principal Engineer*
- **NDC -** Alan Pelton, *Chief Technical Officer*
- **X/Seed Capital Management** – Michael Borrus, *Founding General Partner*

Overall the seminar was a success. The Mechanical Engineering Department at UC Berkeley expressed interest in working with the chapter to continue to host this seminar for future semesters. The ME seminar was a networking opportunity for the Berkeley ME department, the companies involved, and the chapter. The seminar also came at very little expense. The speakers donated their time and the chapter was able to host the seminars and speakers for free with the generous donations from the Mechanical Engineering department for parking passes and

refreshments. With feedback from the students, the chapter has future plans to make the seminars more interactive with resume and interview workshops.

**Zach Nelson of National Instruments makes a presentation in the UC Berkeley Pi Tau Sigma Industry Seminar.**

### b. Industry Information Sessions

The chapter hosted three major information sessions. The company sponsors are Chevron, Accenture, and Apple.

1. Chevron: The chapter invited Chevron Petroleum Company for the first info session. Oil refinery engineers talked about their daily life as well as an overview of the company as an employer (computer presentation). There was also a Q&A session with other Chevron engineers, and procedures on how to apply for a job were presented. The majority of the audience were ME students, however the event was open for all majors (mainly engineering). The number of attendees was slightly more than 100 students, and dinner was served during the event. The chapter received $2000 in donation.

2. Accenture: Joint information session done between the PTS chapter and Tau Beta Pi. A human resources recruiter was invited to speak about career opportunities at Accenture consulting company for engineers. The presentation was done in power point, followed by a Q&A session. The chapter advertised the event to ME students and helped organize the event on the day. Approximately 20 students attended the event. Some refreshments were served. The chapter received $200 in donation.

3. Apple: Multiple speakers from Apple Computer Company were invited for an information session. They explained their daily life at the company, and showed a PowerPoint presentation on some of the engineering highlights at Apple. They showed a slide of an exploded view of the iPhone and a video of the three-point-bending test of the iPhone's screen, which happens to be made of an ultra-flexible ceramic used in windows of fighter jets. Roughly 100 students attended from various departments, and dinner was served. The chapter received $500 in donation.

### c. IDEO Company Tour

In the spring semester, a company tour to visit the innards of IDEO, a Bay Area design firm, was conducted. IDEO is known for their products designs ranging from the shopping-cart-basket hybrid to hanging their bicycles on the ceiling. Fifteen slots were offered to chapter members and officers to travel to the company headquarters. They explored the quirks and queries of one of the most notorious designers of random stuff this side of the Mississippi. We also learned about the secrets of what makes a successful firm, a powerful design, and what it's like to be creepy and elitist at the same time. This IDEO trip is the first of our planned company tours in the future.

## II. Outreach Programs and Community Service

The chapter requires its initiates to complete at least six hours of outreach and community service. Outreach efforts were focused on introducing engineering and science concepts to young students through hands-on activities and lessons. In addition to outreach events (summarized below) the chapter is a co-founder of B.E.A.M., Berkeley Engineers and Mentors, an effort to provide supplemental hands-on science lessons to elementary and high school students in Berkeley and Oakland.

BEAM mentors and Pi Tau Sigma initiates taught science lessons to over 80 students at eight different schools in the East Bay. Lessons ranged from water-rocket dynamics and bridge building to Rube Goldberg machines. BEAM is supported by the Mechanical Engineering department, the Chemical Engineering department, the Engineers Students Council, Cal Corps, Cal Teach, and the Associated Students of the University of California. For next year, we are applying for funding from the Clinton Global Initiative to help expand our efforts.

E4K volunteers introduce students to the wonders of engineering.

In addition to BEAM, California Pi Omega chapter members and initiates volunteered as mentors at outreach events on campus. At Engineering for Kids Day (E4K), mentors taught elementary school students ($4^{th}$ to $6^{th}$ graders) about dynamics and engineering design in the context of an egg-drop competition. Mentors also volunteered their time at the Discovery Expo where $4^{th}$ to $8^{th}$ graders learned science concepts through hands-on activity stations. At Mini-University, an outreach event organized by Society of Women Engineers, PTS mentors taught high school students about fluid statics and stability while students built and tested self-propelled boats with limited materials.

## III. Social Activities

The social activities the chapter hosts are open to all members of the chapter. The following are some of the highlights from the previous year.

- Intersociety sports event with XE (Chi Epsilon)
    - Created to build a stronger relationship between the two societies
    - Enabled the chapter to show its pride by winning a king of the hill sports event.
- Movie Night with Tau Beta Pi
- Ice Cream Social
- Rock Climbing in Berkeley Ironworks
- Sailing the San Francisco Bay with the Cal Sailing Club
- Archery training with the Cal Archery Club
- Other sporting events like a trip to the golf driving range, bowling, and cheering on the Pi Tau Sigma Ultimate Frisbee team.

A social pledge requirement the chapter holds is the Big/Little Sibling event. It is a means of breaking the barrier between officers and pledges. An officer volunteers to take a pledge as a little brother or sister and helps him/her throughout the pledging period. This enables the chapter officers to interact more with the pledges and find out if there could be any changes that can be made to improve the pledging process.

## IV. The M.E. Department Town Hall Meeting

Every semester, our chapter of Pi Tau Sigma coordinates with the Mechanical Engineering department to organize an M.E. Town hall event, a forum through which the undergraduate student body at UC Berkeley is given an opportunity to effectively share their concerns, praises, and advice to faculty who have the means to effect change. Students are initially given a survey containing questions regarding the following matters:

- Facilities – study halls, hours, accommodations
- Classes – value, significance, improvements
- Professors – caliber, cordiality
- Events – career fairs, seminars, faculty dinners

Comprehensive representation of all classes and years within the curricula is very important - the more feedback we receive, the louder such concerns resonate within the movements of the ME department. After the results are submitted, our officers compile the data in development of both graphical and qualitative items of interest to bring to the department's attention. We then host the townhall itself, inviting any and all to attend, in pursuit of establishing a handful of action items to improve upon within the department. The Department Chairs who are present address the student's concerns, and coordinate with our officers after the event to ensure change is in progress. This is the student body's chance to have their voice heard, and affect the future of Mechanical Engineering education here at UC Berkeley. Pi Tau Sigma facilitates this opportunity, and has brought about such improvements in service of our student body:

- Increased integrity of “graduate student instructor” selection
- Removed/added appropriate classes within the department
- Acquired better computer room & student lounge accommodations
- Improved exposure of ME representation within engineering career fairs

## V. Undergraduate Advising Day

Every semester, the mechanical engineering department hosts an undergraduate advising day, which was founded by our chapter. The chapter officers and members always volunteer to be a part of it. We set up our own student table, so undergraduate students are able to get advice on classes and extracurricular activities.
We also assist the faculty and staff with paperwork and logistics.

In addition, and in collaboration with ASME, the chapter hosts an advising week. Students who are in the process of class selection are encouraged to stop by the student lounge to meet with one of the chapter officers to ask questions about the right classes to take and to get their curriculum questions answered.

## VI. Fundraisers

One of our fundraising events in the past year is a monthly barbecue on campus. While providing passersby with lunch and earning a little money in return, the barbecues also served as a way to get the chapter recognized by other Berkeley students. Also, we garner funds through the help of our information sessions. Various companies donate to our chapter for our services in hosting the sessions.

## VII. Chapter Meetings

Three general meetings are held each semester. The theme of the first general meeting is to show the professional side of Pi Tau Sigma. We invite a professor to talk about and present their current research to the chapter. The second general meeting is a socializing meeting. It is icebreaker question and answer session, where officers and pledges share their distinctive traits. In the third general meeting, the chapter presents a closer look at the tasks and benefits of becoming a chapter officer. Our activities committee ensures that food is served in each meeting.

Our weekly officer meetings are conducted each Wednesday night. The chapter president always recaps the activities and projects of the past week. The pledge progress is discussed in detail, and all the officers talk about plans for the next week and beyond.

## VIII. Officer Retreat and Officer Culture Nights

In the beginning of each semester, the chapter officers spend a weekend on a retreat. It's the biggest social gathering among the officers, and lets the newly elected officers get to know each other more in a social setting. Depending on the semester, activities include camping, canoeing, hiking and skiing. The Fall Officer Retreat was in scorching hot Lake Folsom, California. The Spring Semester Officer Retreat was in snowy South Lake Tahoe, Nevada.

In addition, every Friday the chapter sets up an officer dinner. Branded our "Officer Culture Nights," we visit different restaurants every week in the Bay Area and try different types of authentic cuisine. It's our effort to take pleasure in the different cultures in Berkeley while enjoying the company of fellow officers.

**Some of the chapter officers built a snowman during the Spring 2010 retreat in Lake Tahoe.**

## IX. Convention Participation

The chapter president and vice president attended the Pi Tau Sigma National Convention in Texas Tech University last February. As first time attendees, they learned quite a big deal about the national chapter, green engineering, and Robert's Rules of Order. They also made friends from other chapters along the way.

# C. OTHER INFORMATION

### The Chapter Website and Wiki Page

A major upheaval of the UC Berkeley Pi Tau Sigma website was made during the past year. The chapter is very proud of its website. Now, the website enables officers to track and update the pledge requirement progress of each pledge throughout the semester. In addition, each officer is

given the ability to post news items, edit event details, and add media files and slideshows on the website. The chapter website address is http://pts.berkeley.edu.

In addition, in the spring semester, we created a Pi Tau Sigma Wiki. While still a work in progress, the Wiki is a great tool for outgoing officers to pass on valuable information to the newly elected officers. The California Pi Omega wiki page is found in http://sites.google.com/site/berkeleypts.

**Plans for the 2010-2011 School Year**

The chapter will continue to host the already established mechanical engineering industry seminar and volunteer in undergraduate advising. This time, our industry seminar will be more focused on industry workshops such as resume building and mock interviews. In addition, the chapter will also host information sessions sponsored by various companies and plan another tour of a Silicon Valley company.

Intersociety events will be an area of focus of the chapter. We plan to host social activities with Chi Epsilon, the civil engineering honor society, and increase our involvement with the annual Engineering Week in Berkeley. We will also continue to expand our outreach and community service programs with BEAM and E4K.

The chapter will also continue to improve the website and Wiki page, adding pertinent files and information to aid in the transition of responsibilities between incoming and outgoing officers.

**2010 Graduates**

Aaron Alpert – pursuing MS in UC Berkeley
Morad Alvarez – pursuing MS/PhD in UCLA
Rahul Barwani – pursuing MS in UC Berkeley
McKay Hansen – pursuing MS in UC Berkeley
Justin Legg – pursuing MS in UC Irvine
Tony Liu – pursuing MS in Stanford University
Kevin Ma – pursuing MS in Harvard University
Somi Park – plans unknown
Ajay Patel – pursuing MS in the University of Michigan, Ann Arbor
Caleb Royer – pursuing MS in Georgia Tech University
Robyn Shaffer – plans unknown
Michael Yu – pursuing MS in UC Berkeley
Kelly Zhang – pursuing MS in UC Berkeley
Jonathan Brown – plans unknown
Giorgio De Vera – pursuing PhD in UC Berkeley
Martin Wissink – pursuing PhD in the University of Wisconsin
Sam Woodard – plans unknown

## Awards and Recognitions

2010 Excellence in Teaching Award
Professor James Casey

Fall 2009 Officer of the Semester
Morad Alvarez – Vice President

Spring 2010 Officer of the Semester
Tony Liu – Industrial Relations Chair

## Contact Information

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Chapter Website
http://pts.berkeley.edu