

# Material Advantage Chapter of Excellence Application

## University of Illinois Chapter

Prepared by Collin Anderson



*2018-2019 Executive Board*

**Top Row** (left to right): Gillian Niezyniecki (Freshman Representative), Hannah Harris (Biomaterials Representative), Charlotte Israel (Service Chair), Piush Behera (Ceramics Representative), Matthew Clawson (Electronics Materials Representative), Jeremy Shin (Metals Representative), Adam Ladd (Polymers Representative), Enola Ma (Engineering Open House Director)

**Bottom Row** (left to right): Ali Nunes (Social Chair), Mitchell Shroeder (Treasurer), Monica Paul (Vice President), Clarissa Domanus (Secretary), Bao Lam (Professional Chair)

**Not Pictured:** Collin Anderson (President)

# 1 Chapter Overview

Material Advantage is a professional society for students in Materials Science and Engineering. The University of Illinois (UIUC) Chapter is a student organization for undergraduate students pursuing a degree in Materials Science and Engineering (MatSE) at UIUC. Our goal is to serve as both a professional organization to help students grow as materials scientists and promote communication between the department and the student body, to serve as a social organization, and to encourage the growth of friendships in the MatSE program.

Our chapter is run by a 14-member executive board composed of MatSE undergraduate students ranging from freshmen to seniors. This large executive board consists of traditional MA roles such as the president, vice president, treasurer, and secretary, as well as specialized positions to promote service, professional development, and social MatSE events, and finally concentration representatives who promote their specific materials sector (metals, polymers, biomaterials, ceramics, and electronic materials). This specialization and diversity of our executive board allows us to create an effective organization that promotes both professional and social goals of MatSE students and creates an accepting body of students to successfully run events throughout the year. This document will help to summarize how the UIUC Chapter of MA has satisfied the Excellence Criteria and deserves to be considered for the 2018-2019 Material Advantage Chapter of Excellence Award.

## 2 Programming

At the beginning of each school year, a flood of new students enter the campus with a multitude of opportunities in deciding which Registered Student Organizations (RSOs) to join, which classes to take, and how to make friends in a campus of over 40,000 students. It is the goal of MA to be an organization that MatSE students can turn to to solve all of these questions. The first recruiting event that we have each year is the College of Engineering's E-Night, an event which allows engineering RSOs to showcase their organization, what they do, and why students should join. Here we meet as many freshmen MatSE students as we can and ensure that they are on our email list and join our "MatSE Support Group" Facebook page. This year we have been trying to further our social media outreach to be able to connect with more students and we even made a UIUC MA Snapchat and Instagram. This is a trend that we hope to continue in the future in order to adapt to the ever changing interests of incoming students. In addition to attending E-Night, we also have students attend MSE 182, the introductory course for MatSE students at UIUC. Here we talk about our organization and introduce our mentorship program, a program that pairs a freshman student with an upperclassman in MatSE to help them learn more about what courses to take, how to study for exams, and serve as a good point of contact with the rest of the MatSE community. This program underwent a significant amount of growth this year, having more freshman involvement than ever before, and leaves me very hopeful for the future of the organization. We had events such as Movie Night, a baking competition, yard games on the Quad, bowling at the Union, ice skating, and learning how to cope with finals stress. Freshman recruitment also goes hand in hand with electing a great Freshman Representative. At our October GM, freshmen have the opportunity to run for freshman representative, a position with the goal of serving as a liaison between MA and the freshman class, letting us know how better to serve the students. Our Freshman Representative this year did a great job of promoting our organization, encouraging students to come to social and professional events, and encouraging students to run for board positions for the upcoming year. I am proud to say that for next year's executive board, we will be having eight incoming sophomores on the board, a testament to the power of freshman recruitment.

The second goal of our organization is to build a healthy social community for all MatSEs, and this comes with planning diverse and exciting social events. This begins each year with our annual MatSE welcome back BBQ, a time for old MatSEs to meet up again and a time for new students to meet one another. Unfortunately this was cancelled this year due to bad weather. Other social events that went on this year were a trip to Curtis Apple Orchard, a Friendsgiving potluck dinner, a mini golf outing, and a White Elephant Christmas Party. In addition, we have our weekly Happy Hour at Murphy's, a Friday afternoon event where students can go destress after a long week of school and share Irish nachos, a Murphy's food staple. We also hosted our semester barcrawl where students of legal drinking age spent an evening socializing with their peers outside of the classroom.

This year we also participated in four intramural sports, something brand new to our organization. In the fall, we played kickball as Life's a Pitch and broomball as the Slip Planes. In the spring we played indoor soccer as the Summation Squirrels and ultimate Frisbee as Game of Throws. These mixed gender teams were a huge success, bringing in students from all grade levels for a weekly night of fun, laughs, and the occasional win. Every night we would end each game by introducing ourselves and talking about our favorite part of the game. This was a great way for students to meet outside the classroom and have fun. No Strain, No Gain!

One of the other key social events that MA had this year were our Women in MatSE events, events hosted by the women on the exec board to help women in the department bond together in a relaxed environment. Some of the events the spectacular women put on this year were terrarium making and coffee at Espresso Royale. Through this amazing group of women we have managed to increase the proportions of women involved in our program beyond societal norms and through this our organization promotes an accepting and growing place for women in engineering.

This year, we held review sessions for many of the main MatSE courses on campus, including MSE 182, 201, 401, 402, 450, and many more. These were hosted by members of the exec board who either had previously taken the course or were currently enrolled. These consistently had high attendance and were highly appreciated by members of each class. In the upcoming years, we hope to extend the number of classes we are able to hold review sessions to help ensure the success of MatSE students at UIUC.

We also had numerous professional development events which will be talked about in more detail in Section 3, but in general these events included tech talks from numerous companies, student panels to talk about research and internships, preparation for career fairs, and trainings on various useful software packages. We also had a student panel this year to talk about the opportunities, difficulties and planning associated with studying abroad, an opportunity that many students wish to pursue at school.

This year Material Advantage, along with our Keramos chapter at the university (which MA works closely with) sent 12 people to the 2018 Material Science and Technology Conference (MS&T) in Columbus, OH. We enjoyed participating in the many opportunities MS&T had to offer such as the annual chapter convocation meeting, student speaking contest, mug drop competition, student networking mixer, and short courses. At the business meeting, we were able to speak to other chapters and talk about what went well in MA along with some problems we'd been facing and potential solutions, including rules regarding the mug drop competition and strategies to increase membership.

We prepared two mugs for the mug drop competition this year, along with an additional submission from another undergraduate student from our department. Our mugs were prepared by our Herald Jeff Schooler and was prepared for dropping. We finished in third place out of all of the mugs present, which is a significant improvement from our performance last year. Our student speaker for this year was Ali Nunes, and she placed second in the contest with her talk on specialized gel substrates for biological applications.

We also had six students attend TMS this year. Here, we participated in the Materials Bowl competition for the first time and were able to attend multiple talks and lectures from prolific members of the Materials Science community. We were also able to network well with members of other universities including Illinois Institute of Technology and Colorado School of Mines. This event was a great success and we are looking forward to continuing to attend the conference into the future.

One of the largest events of the year for the College of Engineering is the annual Engineering Open House, where Material Advantage makes a big impact. Every year, our EOH Director works with the freshmen class through MSE 183 and with our Concentration Reps to plan and coordinate the running of more than 15 booths in the Materials Science and Engineering Building. This year, both our Freshman Representative and Polymers Representative won an award for their exhibits, winning First Place for Outstanding Freshman Exhibit and Second Place for Outstanding Presentation by a Society. At EOH we also have one of our largest fundraisers of the year in which we sell

cotton candy. This year we raised approximately \$1140 to support sending students to conferences and overall running of the organization. Figure 1 shows a few pictures from the great weekend.



Figure 1: (top left) Gillian presenting on the wonders of hydrophobic materials. (top right) Adam and Talen showcasing the wet world of Orbeez. (bottom left) Our great Destination Technology volunteers. (bottom right) Collin and Mitch: Cotton Candy Extraordinaires

At EOH, we also partner with Desination Technology to show a group of grade school students from the Peoria area around EOH, have a pizza lunch with the students, and show them all that Illinois Engineering has to offer. We also traveled to Peoria in the fall to present projects revolving around air. This will be talked about in further detail in Section 4.

Our last social event of the year was the annual MA auction, where students auctioned off goods and services like baked goods, field trips, and paintings, to their classmates; all of the proceeds went to the chapter.

### 3 Career Development

Career development is one of the main goals of MA at Illinois, and through many targeted events we are able to prepare students for the numerous challenges that college and career exploration entail.

Some of the best events we host are tech talks from companies. At these, companies who are interested in hiring Materials Scientists come and present to our organization, generally with a MatSE focus. After which they generally have time to take resumes and talk to students about job or internship opportunities. This gives companies a more intimate setting to meet students than the hustle and bustle of the career fairs. This is very beneficial for our students. This year we had tech talks from IM Flash (now Micron), Chevron, Clorox, General Electric, and Inprentus. These tech

talks give students a good idea of what opportunities there are for MatSEs in industry and help students in future job prospects.

We also hosted several student panels this year that focused on several career development needs. The first of these talked about building a resume. Here we helped students learn what employers are looking for on a resume and how to successfully advertise yourself as a Materials Engineer. We also had a student panel to talk about internships, in which juniors and seniors talked about their internship experiences they had had with various companies. In addition to this, we also started a living document of internship experiences that students can add to after their internships. In this document, students explain some of the best and worst parts of their internship. The goal is that over time this document will showcase the variety of career fields MatSE students can pursue and show more than the classroom ever could. We also had an undergraduate research student panel that talked about their undergraduate research experience, how to find a professor to do research with, and what opportunities it opened for them. One of the most difficult things for students sometimes is simply finding out what there is to do with a MatSE degree, and these student panels give students a showcase of a multitude of different experiences.

Prior to each career fair, we offer career fair advice. This comes in the form of resume reviews, a mock career fair booth, and interview training. This helps give students a second perspective on their resume or their elevator pitch, allowing them to be more successful in their career search.

We also had multiple software trainings throughout the year. The first of these was a  $\text{\LaTeX}$  introduction to teach students how to write resumes and technical papers in  $\text{\LaTeX}$ .  $\text{\LaTeX}$  is a powerful tool that can be very intimidating when first learning to use it. The second software training we had was with MATLAB. MATLAB is heavily used in several MatSE course, especially many sophomore level classes. In general, the program is not heavily taught in class, and so we hosted a session to teach the basics of how to use the program. Hopefully in the future we can continue doing tutorials for program such as Origin and MiniTab and create paper based or video based tutorials for students to better learn the programs that they must use on a daily basis.

## 4 Service

Our chapter of MA has developed a relationship with Calvin Coolidge Middle School and has, for the last few years, been invited to give a demo at their Destination Technology outreach program every Fall. This program is sponsored by Caterpillar, a Peoria-based company, and seeks to teach junior high students about the importance of critical thinking in designing engineering solutions. This year, the theme was centered around air. All of the grade school students enjoyed the projects we presented them and enjoyed interacting with the MatSE students.

The Destination Technology kids also came to Engineering Open House in the spring where volunteers from MA spent the day showing the kids around the campus. Some of the highlights of their day were seeing the concrete crusher, making dry ice ice cream, and watching the robo-brawl. We treated all of the kids and their chaperones to a pizza lunch as well.

Another event that MA helped with this year was the Engineering Council Food Drive supporting the Eastern Illinois Foodbank. This competition was between the various engineering RSOs on campus and MA had a good showing and significantly helped the food bank

## 5 Social Activities

We had many social events this year that were highly attended. One of the best events of the year we had was our trip to Curtis Apple Orchard. Here we picked apples, drank hot cider, and enjoyed the good company. Figure 2 shows some of the best pictures from the trip in October.



Figure 2: (top left) Jeff enjoying a sweet Pink Lady apple. (top right) Several students fascinating over the mini pumpkins. (bottom left) Taking in all Curtis has to offer. (bottom right) Traditional photo on the giant chair at Curtis

We also had a lot of success with our new intramural teams this year. We competed in kickball, broomball, indoor soccer, and ultimate Frisbee. Figure 3 shows a couple of photos from intramurals this year. We are excited to continue our co-ed intramural teams into the future.

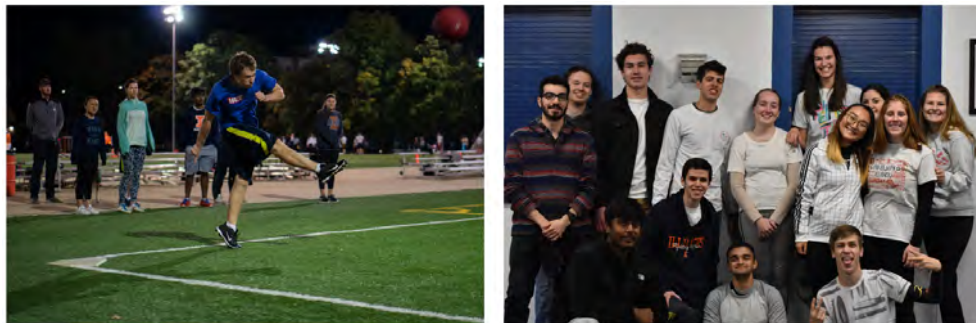


Figure 3: (left) Adam kicking a home run. (right) World class broom ball team.

Our minigolf event was also very successful. We had eleven students showcase their skills at the local Putt Zone Fun Center. Figure 4 shows a few pictures from the fun event.



Figure 4: (left) Jeremy and friends tearing up the back nine. (right) Students enjoying themselves on the brisk October day.

We also enjoyed several informal get togethers, having our Friendsgiving Potluck and our White Elephant Christmas Party. At Friendsgiving, each student made a food item to share with everybody, and we all ate a meal before Thanksgiving break together. The White Elephant saw each student purchase or make a small gift worth less than \$15 and have a blind gift exchange. This was a great event that everybody enjoyed at was a great way to end the semester.

## 6 Chapter Management

Table 1 outlines the general duties of each member of the executive board. The following sections will discuss various topics surrounding our chapter management.

### 6.1 Elections

Material Advantage elections took place at our April General Meeting. Candidates are allowed to run for up to three positions and submit a bio slide for each position. Candidates are allowed to give a two minute speech, and then there is an additional two minutes for questions from the audience. While a candidate is giving their speech and being asked questions, the other candidates for that position wait outside the room so as to not hear what the other candidates are saying. After each candidate has given their speech, discussion of the candidates occurs for an additional four minutes amongst the audience, discussing the pros and cons of each candidate. An anonymous vote is then taken, counted by the President and confirmed by the Vice President. The winner of the position is then announced. Only paid members of MA are allowed to vote and once a candidate has won a position they are not allowed to run or receive votes for the other positions they were going to run for. About two weeks after elections, we had a meeting with the current 2018-2019 and the future 2019-2020 executive boards to facilitate a proper transition from the current year to the next.

### 6.2 Recruiting

As mentioned in Section 2, recruiting starts at E-Night in the fall and with MA officers attend freshman classes to introduce the organization to potential members. After this, we host a success-



ful mentorship program, pairing a freshman with an upperclassman to help guide them through the beginnings of college and serve as a contact for MatSE. MA mentorship events include events like bowling, ice skating, baking competitions, and many more. These events help introduce freshmen students to both upperclassmen and other freshmen students. It is also the goal of the Freshman Representative to help in recruiting, determining events that the students would be interested in and helping in communication with the freshman students.

<b>Position</b>	<b>Description</b>
President	Oversee all MA events; liaison between department and student body; lead all meetings; support rest of exec in performing their jobs
Vice President	Assistant to the President; organize mentorship program; run semesterly course feedback session;
Treasurer	Handles all chapter funds and purchases; collects dues; helps write and pursue grant proposals
Professional Chair	Lead career development events; point of contact for recruiters
Social Chair	Lead all social events; organize intramural teams
Service Chair	Lead all service events
Secretary/Webmaster	Sends out newsletters, emails; maintains website; reserves university rooms for events
EOH Director	Plans, organizes, and leads Engineering Open House; works with MSE 183 teaching assistant
Metals Representative	Answer questions about MatSE concentrations and classes; plan and lead EOH Demos; hold review sessions for classes
Polymers Representative	
Ceramics Representative	
Biomaterials Representative	
Electronic Materials Representative	
Freshman Representative	Liasion between MA and freshmen class; help plan recruiting events; hold review sessions for intro classes

Table 1: Position descriptions of Executive Board positions of Material Advantage UIUC

### 6.3 Membership

After initial recruiting, food at events and meetings becomes available only to paid members. Membership is also incentivized for priority in signing up for events with limited numbers and being able to vote for positions in April. An Excel document is used to maintain record of all paid members and is updated when a new member pays and emails his or her confirmation to the Treasurer.

## **6.4 Finances**

The Treasurer is responsible for all chapter finances. Our chapter holds a non-profit bank account which is used to buy food, apparel, and other necessities and an RSO account through the university that is used to store university provided resources. The largest expenses are costs for conferences (MS&T and TMS) and food at events. Some of the conference costs are offset by applying for travel and student grants while costs for food and other events on campus are funded through fundraising efforts. The most successful fundraising this year was our cotton candy sale and our MA auction, generating approximately \$1,500 for our organization.

## **6.5 Chapter Record Keeping and Reporting**

Chapter Records have been stored in a shared Google Drive Folder since the 2015-2016 school year. Every year prior to the current year is stored in an "Archives" folder that serves as a reference for future exec boards. Within the Drive, there are several subfolders for Mentorship Program, Executive Meeting Minutes, GMs, Events, Photos, Attendance, Course Feedback, Transition Documents, EOH, and Misc. The financial records are maintained in a separate Google Drive available only to the Treasurer and the President. At the end of each year, the files are archived for easy access for next year.

## **6.6 Publicity**

The Secretary did a lot of work on our website this year, making it visually more appealing and easier to navigate. We want to continue to improve our website for recruiters and students to be able to more easily access needed information. This year, we improved our MA specific email group to send out newsletters to students, and this was extremely successful. Our other main form of communication is through our MatSE Support Group Facebook Page where we post information about all of events, meetings, and opportunities for students. For communications with the entire MatSE student body, we are able to send out a mass email through the department's server, allowing us to reach all of the MatSE undergrads.

## **6.7 Chapter Success**

As our organization continues to grow, it becomes ever more important to offer a variety of events and opportunities for students to engage in on campus. This year we were able to continue our strong freshmen recruiting which began last year and were able to consistently having several freshmen at all of our events. We also were able to continue and expand on our mentorship program, promoting more unity within the MatSE student body. This year we also attended TMS for the first time which was a huge success and a tradition we hope to continue into the future. We continue to involve more women within our organization, a testament to the ability of the female members of our executive board in breaking down societal norms. As MA UIUC continues into the next year, it is my goal that we will continue to bring in and recruit a strong and diverse group of students and I have faith that through continued departmental and alumni interaction, our career development will develop to a level never before seen for Materials Science at Illinois.

## Letter Of Support

It is my pleasure to write a letter of support on behalf of the University of Illinois Material Advantage Chapter. The Chapter plays a central role in the culture of our undergraduate program at the University of Illinois, Urbana-Champaign—providing opportunities for personal and professional growth of our students and our department. In my fifth year as the faculty advisor for this chapter, I continue to be impressed by the organization and degree of involvement that these undergraduates have taken upon themselves to improve their own undergraduate experiences, to prepare themselves and their peers for professional roles and to improve the department for those who follow them. I believe that the pages that follow document this level of dedication, diversity and success without need of additional accolades, but I am happy to elaborate.

The activities and contributions of the University of Illinois Materials Advantage Chapter can be divided into several categories, including: programming, service, career development, social and chapter management. I will address each individually.

*Programming:* This chapter runs a highly diverse and active program capable of engaging students throughout the program from freshman to seniors, domestic to international students and those interested in industrial and academic careers. This high level of programming not only takes a tremendous amount of work, but also great leadership and strong organizational infrastructure—both of which are key attributes of this chapter. The programming is stable, but ever adapting to the needs of the undergraduates. For example, the long standing tradition of significant participating at the Engineering Open House was complemented this year by an increasingly successful mentoring program, which has delivered the strongest returns yet in freshmen involvement, as well as new efforts such as the very popular intramural sports and participating in the Materials Bowl at TMS for the first time.

*Service:* Service is an important component of any student organization, necessary to engage undergraduates in efforts beyond their own immediate benefit and vital to the development of well rounded team members for the professional world. This is an area that the MA leadership has identified for potential growth in the future and I'm excited for this expansion. Their existing service activities of the chapter are well documented, but I would also like to highlight their service to the department. Materials Advantage is the primary liaison between the undergraduate population and the Materials Science and Engineering Department at the University of Illinois. This is a role that they take very seriously, providing constructive feedback about specific classes and professors as well as broader curriculum changes. For example, they hold dedicated feedback sessions at the end of each semester and faculty are expected to directly address this feedback in annual reviews internal to the department! We have also engaged MA leadership by inviting them to join us for informal faculty teaching team meetings, where they can further amplify the ideas, concerns and needs of their peers through one-on-one discussions with faculty. Mentorship of underclassmen, through individualized relationships as well as targeted workshops around computational tools, technical writing and local research opportunities is also a concerted effort that I consider a very valuable service to the department as well—and in my opinion, somewhat unique relative to our peer departments. Personally, I have been able to work directly with MA leadership to identify needs of my current students and solutions to challenges that they often know about before I do!

*Career Development:* The students have done a wonderful job maintaining a diverse program of career development activities for the undergraduate population and are always striving to improve this. This year, they continued resume critiques, organized numerous technical talks and

the associated access to recruiters, and organized a new panel to help prepare underclassmen interested in graduate school. They have also established more a more active relationship with the departmental alumni board, which in the future is expected to lead to even more of these events.

*Social:* This is arguably one of the most fun aspects of the chapter that truly brings the student body together in a way that few other opportunities can. Often, the social activities are what attract new students and then get them involved in other aspects of the organization. I have been particularly impressed by the level of freshman participation for a second year in a row in social activities and otherwise—they are clearly doing something right!

*Chapter Management:* I believe that this speaks for itself in the context of the other categories. It would not be possible to have such a high achieving chapter without excellent organization and management as I've already addressed.

I am very proud to be associated with our Materials Advantage chapter as I believe they make a tremendous impact on our department and will only continue to do so with unwavering support from our department.

Sincerely,

Jessica A. Krogstad

Assistant Professor & Materials Advantage Faculty Advisor