

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Chapter Development Report
Biomedical Engineering Society, UIUC Chapter
May 2020-May 2021

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CDR Summation:

This Chapter Development Report of the Biomedical Engineering Society at the University of Illinois at Urbana-Champaign depicts the structure and activities of our student chapter for the 2020-2021 academic year. Our chapter was able to provide numerous opportunities for our members to network with industry professionals through multiple corporate presentations and career development seminars at a total of 12 meetings. This year we have adapted our programming to function largely on a virtual platform, allowing students to participate in our activities whether they are on campus or at home. We have expanded our professional offerings to include graduate school speakers to introduce students to possible career paths after undergraduate education and facilitate networking environments with graduate school admissions officers. We have continued the new professional mentoring program that we started last year, pairing recent alumni with current students based on career path interest. We pivoted our outreach program to include virtual visits to local libraries and schools, as well as those across the country, embracing the limited in-person contact we had this year. Although many of our popular social events were not possible due to the pandemic, we have transformed many traditions into virtual events and started new events that allow for a hybrid in-person and online-friendly involvement, giving our members a relaxed setting to develop lasting friendships. Our technical offerings such as Engineering Open House design teams and skillset workshops were almost entirely transitioned to an online platform, offering the same level of intellectual enrichment and inspiration for our members. Some of the key future directions of the UIUC BMES chapter focus on membership growth and retention, creating valuable mentorship networks, and expanding technical opportunities. We also anticipate regaining momentum as pandemic-related precautions ease due to increasing vaccination rates, allowing member participation and recruitment to greatly increase. These changes will allow the UIUC BMES chapter to continue to flourish here at the University of Illinois.



COLLEGE OF ENGINEERING

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Urbana, IL 61801

May 21st, 2021

Dear Biomedical Engineering Society,

We are pleased to submit this report on behalf of the Biomedical Engineering Society chapter at the University of Illinois at Urbana-Champaign.

Our chapter has continued to grow in membership and in impact with activities. In the past year, membership in BMES included students across many engineering and STEM majors, as well as 12 nationally registered members. The society hosted 12 general meetings with industry speakers and professional development opportunities, as well as a plethora of options for social gatherings, such as outdoor sports, picnics, happy hours, pumpkin carving, etc., 6 technical workshops, with training in circuits, CAD, Matlab, etc., and outreach options, such as school visits, hosted events on campus and a partnership with SWE. Most of these events occurred virtually to accommodate the comfort levels and safety of all students, and several had both in-person and virtual options.

While the chapter is very successful, we have plans to continue to improve. One item we need to improve is to increase our social media presence on Instagram and Facebook. The secretary will work with other members of the executive board to enhance social media presence. Additionally, we want to improve mentoring opportunities, both social mentoring and professional mentoring. A new executive position will be added to increase recruitment as campus returns to a majority of in-person instruction and programming. We plan to foster a much stronger relationship with the freshman class at the very beginning of the fall semester, and start the program soon after school begins when most students have yet to find a mentoring relationship. We also plan to hold more interactive events and team-building challenges to keep members engaged and meeting together throughout the year. For professional development, piloted more professional development activities this year and will continue to enhance these activities by better engaging professionals and alumni as mentors to students and training mentees how to leverage these opportunities.

We are very proud of our accomplishments and are looking forward to another great year.

Sincerely,

Caroline Fatina
Outgoing President

Taylor Wills
Incoming President

Jenny Amos, PhD
Faculty Advisor, UIUC BMES

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I. Administrative Report

Abstract: The UIUC BMES chapter is composed of eight officers. Officers were elected at the end of the spring 2020 semester and served for the entirety of the 2020-2021 academic year. As outlined in our chapter bylaws, each officer is responsible for a specific set of duties as well as taking on a variety of other tasks throughout the school year. The UIUC BMES executive board meets on a weekly basis to organize events and opportunities for our members. Most event planning and chapter decisions are made during the executive board meetings and therefore these are integral to the success of our chapter. A weekly newsletter of upcoming events and important updates is compiled and sent out by the secretary to keep our members informed. Our chapter also hosts general meetings to provide updates on chapter business to our members. Professional speakers are invited to present at our general meetings. This past year, the technical director, outreach chair, and secretary led the technical committee, outreach committee, and media committee, respectively. Our membership consisted of 69 paid UIUC BMES members.

Executive Officers 2020-2021

President: Caroline Fatina (cfatina2@illinois.edu)

The president is responsible for supervising the chapter's affairs and activities, presiding over all meetings, and delegating tasks to other officers.

Vice President: Joy Chen (joychen@illinois.edu)

The vice president is responsible for organizing the trip to the BMES National Conference and establishing and maintaining relationships with corporations.

Treasurer: Liz Troy (etroy2@illinois.edu)

The treasurer is responsible for maintaining a detailed record of the chapter's financial transactions, drafting a yearly budget, and collecting membership dues in order to maintain a list of paid members.

Secretary: Jackie Way (jackiew2@illinois.edu)

The secretary is responsible for sending out a weekly email newsletter, tracking attendance at all events, taking notes at all BMES meetings, logging all events for future years, leading the media committee, and managing our website <https://www.bmes-uiuc.com/>.

Industrial Relations Director: Taylor Wills (tjwills2@illinois.edu)

The industrial relations director is responsible for organizing general meetings and professional workshops.

Technical Director: Jairaj Narendran (jnaren2@illinois.edu)

The technical director is the head of the technical committee and is responsible for overseeing all Engineering Open House projects, design teams, and setting up technical peer-led workshops.

Outreach Chairs: Grace Huberty (huberty4@illinois.edu)

The outreach chair is responsible for coordinating service and volunteering events as well as managing the outreach committee.

Social Chair: Maddie Blaauw, 1st Semester (mblaauw2@illinois.edu); Sonja Gurbani, 2nd Semester (sgurba2@illinois.edu)

The social chair is responsible for planning and executing social events for our members as well as organizing the social mentor program and heading the social committee.

Membership

The Department of Bioengineering at the University of Illinois at Urbana-Champaign is composed of approximately 310 undergraduate students. A majority of our 69 paid members are bioengineering undergraduates, but we also have members from other disciplines, including computer science, biology, materials science engineering, engineering mechanics, and electrical engineering. Additionally, we have 12 registered national members.

Meetings

General Meetings	Date	Description	Attendance
Introductory GM	8/26/20	Introduction to BMES, with a presentation from PSYONIC	70
GM #2	9/23/20	Presentation by AbbVie	47
GM #3	10/13/20	Presentation by Procter and Gamble Co-hosted with UIUC's American Chemical Society	33
GM #4	11/11/20	Presentation by Becton, Dickinson, and Company	21
GM #5	2/3/21	Presentation by Medline Industries	33
GM #6	3/24/21	Presentation by Abbott	36
Executive Meetings			
Executive Meeting #1	4/26/20	Transitioning logistics (new board)	8
Executive Meeting #2	5/3/20	Wrapping up the year, summer plans, national conference (national BMES meeting)	8

Executive Meeting #3	8/21/20	Quad day preparation, committee applications, GM planning	7
Executive Meeting #4	8/30/20	Updates on how to advertise events and reserve spaces for in person events, planning REU event, budgeting	6
Executive Meeting #5	9/6/20	Budgeting and accounts, design-a-thon planning, volunteering team signup, alumni mentoring program	7
Executive Meeting #6	9/13/20	GM planning, EOH brainstorming and team lead applications	7
Executive Meeting #7	9/20/20	Funding from Engineering Council, event planning, freshmen feedback	8
Executive Meeting #8	9/27/20	Event planning (outreach, social, tech)	6
Executive Meeting #9	10/4/20	GM planning, funding logistics, event planning, EOH team member applications	8
Executive Meeting #10	10/11/20	GM planning, event planning (tech, social, outreach)	7
Executive Meeting #11	10/18/20	Engineering Council meeting takeaways, professional event planning, mid-semester feedback	7
Executive Meeting #12	10/25/20	I Voted stickers, event planning (professional, outreach, tech)	8
Executive Meeting #13	11/1/20	New deadline for submitting receipts, high school outreach/outreach event brainstorming	8

Executive Meeting #14	11/8/20	Funding approval, reviewing departmental/student feedback about BMES, bioengineering discord server	7
Executive Meeting #15	11/15/20	Coffee chat event, outreach event planning,	8
Executive Meeting #16	11/29/20	Ongoing event planning	6
Executive Meeting #17	12/6/20	Spring 2021 budget planning, winter break planning, study break event	7
Executive Meeting #18	1/24/21	Introducing funding pool and sponsorship changes, social chair application, EOH underway	8
Executive Meeting #19	1/31/21	Event planning (industry, outreach)	6
Executive Meeting #20	2/7/21	Bioengineering/BMES wiki page, event planning (tech, industry, outreach), apparel	8
Executive Meeting #21	2/14/21	Event planning (tech, industry), EOH videos	6
Executive Meeting #22	2/21/21	Spring picnic/banquet planning, apparel, EOH and workshop planning	8
Executive Meeting #23	2/28/21	BYI and other outreach events, social event brainstorming	6
Executive Meeting #24	3/7/21	EOH, social event planning, outreach	7
Executive Meeting #25	3/14/21	GMs, professional and social event planning, coffee chat, announcing exec board applications	6

Executive Meeting #26	3/21/21	Spring picnic/banquet logistics, social events, workshops	8
Executive Meeting #27	3/28/21	EOH, in-person workshop, recurring outreach event	7
Executive Meeting #28	4/4/21	Election timeline, social event planning	7
Executive Meeting #29	4/18/21	Election results and logistics	7
Executive Meeting #30	4/25/21	Transition meetings for new exec	15

II. Treasury Report

Abstract: The UIUC BMES Chapter has three accounts available for financial transactions. The BIOE account is only used in the case of a corporate or departmental donation. The RSO and Credit Union accounts are used by the treasurer to handle reimbursements and deposits. The primary form of income for our chapter is membership dues. We had a smaller income than expected due to a decrease in membership, which was largely a result of the pandemic. We were then able to reduce the costs of events and incentivize engagement. The Engineering Council also provided funding to support some of our larger events throughout the year. The main expenses for our chapter come in the form of general meetings and social events. In the future, we hope to find potential forms of sponsorships to cover the expenses for events and to continue partnering up with other societies to split the cost of events. Due to COVID-19, we were unable to host many of our larger and more expensive fall semester events. Spring semester events were also scaled down or online. However, we were able to be flexible with event scheduling and we did offer new online or socially distanced events.

Financial Summary

Account	Balance	Description
BIOE	-	Must receive approval from BIOE department to withdraw from account.
RSO	\$2,874.11	Turn in voucher forms to RSO office for reimbursements; deposit money at Henry Administration Building.

Credit Union - Savings	\$17.66	Must have at least \$5 at all times.
Credit Union - Checking	\$2,552.82	Uses checks; mainly used for small-scale reimbursements.
Total	\$5444.59	

Balance Sheet

Income

Category	Amount	Description
Dues	\$1,035	Chapter Dues are \$15; 69 paid UIUC BMES members
Corporate Sponsorship	-	No corporate sponsors this year
Other	\$537.33	Engineering Council Funding
Total Income	\$1,572.33	

Expenses

Category	Amount	Description
Meetings	\$569.81	General Meeting expenses, Career Development session expenses, Banquet, BMES Conference funding
Social Events	\$166.89	Includes picnics, intramurals, etc.
Outreach Events	\$221.34	Middle school visits, Bioengineer Your Impact, etc.
Technical Development	\$234.71	Workshops, design competitions, media, etc.
Total Expenses	\$1,192.75	

Totals

Total Income	\$1,572.33
Total Expenses	\$1,192.75

Net Income	\$379.58
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III. Chapter Activities

Abstract: BMES UIUC offers its members a plethora of activities including social, technical, professional, and outreach opportunities. We are a highly active and supportive chapter with events happening weekly and mentoring opportunities available with upperclassmen and alumni. We seek to foster a spirit of innovation and excitement surrounding the biomedical sciences that is inclusive and multidisciplinary. We want to provide an environment in which our members can have fun, grow, and inspire others. In this report we have included the recorded statistics on event attendance and expenses. To aid in brevity, all cost breakdowns are listed in the Treasury section.

A. Social Activities

Abstract: The UIUC BMES chapter organizes a large number of social events for our members throughout the year. Our chapter takes great pride in offering our members a variety of events that allow members to form long-lasting friendships. This year, we offered events such as game nights, happy hours, craft tutorials, coffee chats, and study breaks. Members look forward to these events, and we will continue to offer them in the future. Many of our social events are well attended and provide a great opportunity for our members to develop friendships within our community. We hope to add more social events and improve current events such that attendance is increased in the coming year and the chapter is able to regain members lost during the pandemic. Our goal is for our members to develop long-lasting friendships and feel a sense of community within our chapter. Due to covid-19, we were unable to host several of our usual events; however, we did successfully host virtual versions of traditional events as well as establish new events that brought our members together and brought a semblance of normalcy.

Virtual Game Nights

This year we held several virtual game nights over Zoom where members could socialize and take a break from their busy schedules. This was a great way for our community to stay connected while we were not physically together, and created an opportunity for new and old members, as well as under- and upper-classmen to form strong bonds.

Game Night 1	9/10/2020	15 undergraduates
Game Night 2	9/30/2020	12 undergraduates
Game Night 3	10/22/2020	10 undergraduates
Reading Day Study Break	12/10/2020	12 undergraduates

Coffee Chat with Professors

We held two coffee chats this year with professors Dr. Holly Golecki, Dr. Paul Jensen, and Dr. Karin Jensen to give members a chance to interact with our professors in a casual setting. These coffee chats took place over Zoom. Members were able to ask questions related to the professors' work and research life as well as outside of these topics.

Coffee Chat with Dr. Golecki	11/16/2020	10 undergraduates
Coffee Chat with Drs. Jensen	3/18/2021	25 undergraduates

March Happy Hour with SWE and ASCE

BMES members were invited to a combined event with two other engineering RSOs on campus to participate in online (Zoom) activities as well as pick up appetizers from a local pub. This event gave BMES members a chance to interact with other engineering students they may not normally interact with as well as help the organization become more connected with other organizations.

March Happy Hour with SWE and ASCE	3/26/2021	5 undergraduates
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Craft Workshops

As a way to relax before midterms, BMES members were invited to participate in a pumpkin carving/decorating workshop (fall semester) and calligraphy workshop (spring semester) where they were given supplies and some snacks to practice their art skills. One member who was well-versed in calligraphy was able to give a small tutorial and pointers during the calligraphy event. This gave members the chance to interact with one another in a more casual setting.

Pumpkin Carving/Decorating	10/25/2020	20 undergraduates
Calligraphy Workshop	4/16/2021	7 undergraduates



Spring Picnic/Banquet

Our chapter typically holds a picnic for BMES members and BME professors at the beginning and end of each school year. The picnic allows members to socialize with other members and professors while playing volleyball, throwing a frisbee, and eating well cooked food. BMES members enjoy a relaxing day outside while meeting other members and speaking with professors within the department. This year, since we were unable to meet in person in a larger group setting, we conducted a hybrid in-person/virtual picnic in the spring on April 24, 2021. Members were able to spend some quality time with one another and enjoy pre-packed ordered food.

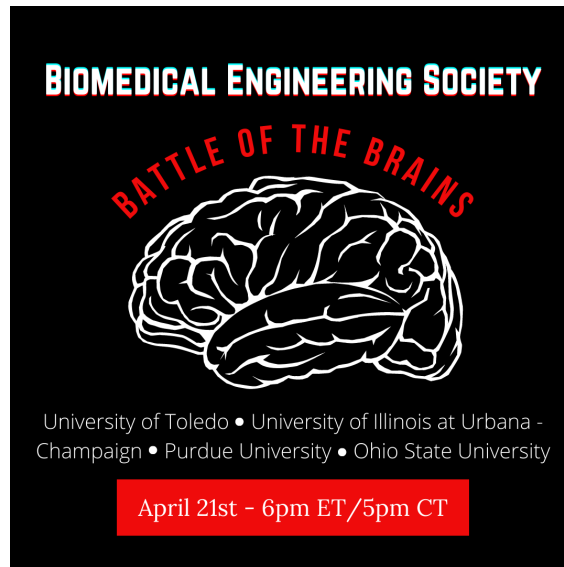
B. Inter-chapter Activities

Abstract: The inter-chapter activity we did this year gave us a chance to interact with other schools in a casual setting as well as receive additional information about ongoing BMES activities. We also hope to reach out and meet members from other chapters in the Midwest to improve our inter-chapter related activities.

BMES Battle of the Brains

This event, started by the University of Toledo BMES chapter, involved our chapter, the Ohio State University chapter, the Purdue University chapter, and of course, the Toledo chapter. During this event, teams competed against each other on the online website Kahoot, playing trivia games. Our chapter won the competition and we will be mailed a trophy by the Toledo chapter. Discussions towards the end of the event arose about making this an annual event. This experience helped our members and organization get to know other members from different schools.

BMES Battle of the Brains	4/21/21	6 undergraduates
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C. Outreach Events

Abstract: Our BMES chapter is very involved in the local community in our volunteer work. This year, we held four workshops for young students to learn more about STEM, some of which were pre-recorded videos with at-home activities for the Champaign Public Library, and some of which had our volunteers interacting live with 3rd through 5th grade students over Zoom. Our

chapter also hosted the fifth annual Bioengineer Your Impact event, a day for high school students to learn about bioengineering. Nine students attended this year through Zoom and participated in a design challenge as well as hearing presentations from two professional speakers. We also participated in events for the local community, such as making cards for the staff at the Carle Foundation Hospital in Urbana. Because all of our volunteering events were virtual this year, we were able to expand beyond the local community as well to record videos of ourselves reading picture books to young children in Maryland and participate in the American Heart Association’s Heart Walk to raise awareness for heart disease. We continued last year’s volunteering team, allowing for volunteer hours to be tracked to increase volunteer participation. Members of the Outreach Committee also spent the year designing a website to allow volunteers to track their volunteer hours, which we hope to have implemented next school year. We hope to expand our activities next year as we are able to volunteer in-person.

STEM Workshops

Due to the virtual nature of this academic year, we had to be creative in our ways to work with young students in the community. We held four workshops to teach kids about STEM in fun and interactive ways, all virtually. At one of the workshops, we recorded videos for middle school students at the Champaign Public Library (CPL), teaching them science concepts that could then be practiced with common household materials. At our other workshops, we worked with children directly. We had two workshops to teach math through fun art activities, and another workshop where children in 3rd-5th grade could learn about and draw the body’s organ systems. Every student in attendance had a lot of fun sharing their drawings, and we hope to host a similar art activity next year.

CPL Videos	9/12/2020	7 undergraduate volunteers
Organ Systems Workshop	11/1/2020	9 undergraduate volunteers
Math Art Workshops	3/13/2021 and 4/24/2021	9 3rd-5th grade students

Events outside of Champaign-Urbana

A benefit of virtual volunteering events is that we were able to volunteer to help those beyond our campus community. At the American Heart Association’s Heart Walk, students were able to walk in their local area to raise awareness for heart disease, whether they were at the University of Illinois campus or at home. This made it accessible to students who weren’t able to be on campus to volunteer. We also participated in a virtual read-along for young students in Maryland. Their school was closed because of COVID-19, so they did not have people to read to them. We were able to record ourselves reading a picture book and send it to the organization hosting the

event, United Way of Central Maryland. The videos are now on YouTube for children to watch whenever they would like to be read to.

Heart Walk	10/10/2020	4 undergraduates on campus
Virtual Read-Along	3/28/2021–4/10/2021	2 undergraduates

Cards for the Carle Foundation Hospital

Some of the people most affected by the COVID-19 pandemic are medical staff in hospitals, so in order to show our gratitude, we asked BMES members to create electronic cards for those at our local hospital. Our volunteers made 24 cards that were distributed to medical staff at Carle Foundation Hospital to thank them and show our support. Some examples of cards are below:



Cards for Carle	2/7/21–2/14/21	24 cards made
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Bioengineer Your Impact

Bioengineer Your Impact introduces high school students to biomedical engineering through a variety of activities like professional presentations, chats with current biomedical engineering students, and a design challenge. Dr. Aadeel Ahktar presented about the prosthetic company he founded, Psyonic, and being an inventor and innovator. Dr. Jenny Amos presented about opportunities after graduation such as industry, graduate school, and medical school at the new University of Illinois engineering-based Carle Illinois College of Medicine. Students were also able to learn from current bioengineering students, all of whom were members of BMES. The students then completed one of two activities: creating their own prosthetic hands, or coming up with possible engineering solutions to a given biomedical challenge. Nine high school students were in attendance through Zoom, and we were able to work with students outside of the Champaign-Urbana community through the virtual nature of the event.

Bioengineer Your Impact	3/6/21	9 high school students
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Outreach Committee

The Outreach Committee assists the Outreach Chair by organizing events and helping to recruit members for events. The Outreach Committee assists in planning every volunteering event, and this year the committee faced an extra challenge in finding ways to help the community completely virtually. It offers BMES members a way to give back to the community beyond volunteering at events, because they also locate and plan events for all BMES members to volunteer at. We continued the Volunteering Team this year as well, which was composed of members who wanted to volunteer on a regular basis and receive extra updates about events. Some of our committee members also created a website to track volunteer hours for our volunteers, so that volunteers would be able to see how many hours they had volunteered.

D. Mentoring Activities

Abstract: The UIUC BMES chapter offers various mentoring activities for our students. The opportunities are designed to allow interaction between underclassmen students and upperclassmen in a meaningful setting. For the sixth year in a row, students could participate in a revamped mentoring program. The program paired several upperclassmen and multiple underclassmen together. Throughout the program, the underclassmen received advice about classes, careers, and the bioengineering field while also developing a long-lasting friendship with the upperclassman. In addition to the social mentorship program, a new professional mentorship program that was initiated by the Industrial Relations Director in the 2019-2020 school year was continued. This program distinguished itself from the social mentor program by focusing more on professional and soft-skill development. The program was a great addition to the chapter's mentorship offerings. Finally, a new addition of a Discord server was implemented this year to help students connect with one another virtually, whether it be for coursework-related advice or for social networking.

Social Mentoring Program

A social mentor program was implemented for the sixth year in a row. Upperclassmen that volunteered for the program were paired up with multiple freshmen or sophomores who opted to join the program. Mentors and mentees were asked to meet at least once a month on their own as well as come to events organized by a member of the Social Committee.

Mentors found it enjoyable to help younger students through the program and provide guidance to those students. Mentors would regularly help the mentees with writing their resumes,

composing emails to professors about research, and directing the mentees to relevant campus resources for any problems the mentees had. The mentees gained assistance with any help, a contact on campus for any questions they may have, and a person to discuss future goals and campus life with.

Professional Mentoring Program

In addition to the social mentoring program, a professional mentoring program was started in Fall 2019. Interested undergraduates were paired with graduated BMES alumni based on career interests, including medical school, graduate school, or industry jobs. The goals of this program were numerous. For one thing, it is important for undergraduates to develop and practice professional soft skills and to become comfortable with networking. This can be valuable for future interviews, applications, and job hunting. Additionally, the program aimed to give students a resource to ask honest questions that they cannot ask to recruiters. Finally, the program fosters a stronger relationship between BMES and its alumni network.

Participants were encouraged to meet or call with their mentors three times throughout the fall to learn about career opportunities and get advice for the future. One participant was able to leverage her connection to explore a future career in consulting. Another participant got valuable advice for how to manage pre-med classes while studying a rigorous engineering curriculum. Many students gave feedback that they found their relationships to be valuable in exploring future career opportunities.

In its second year, the program successfully paired 27 undergraduates with 32 graduated BMES alumni during the fall. Unlike the first year of the program, it was continued in the spring due to significant interest. In the spring, 23 undergraduates were paired with 14 graduated BMES alumni. Mentees felt that many of their questions and needs had been answered in the first semester, however, due to COVID affecting the job market, many students requested continued mentor support. Feedback from participants indicates that it was well received, and a comment from one mentor participant about having a panel of alumni answer questions was then implemented into a graduate school general meeting in the spring. Overall, the overwhelming success of the program and the significant second semester interest makes it an exciting addition to BMES offerings.

Discord Server

To expand on our mentor program offerings, this year we created a Discord server for BMES members and the UIUC bioengineering community to connect with one another on. Several channels were initiated on the server to sort conversations by topics such as course advice, career advice, upcoming BMES event updates, and open social topics. This was a great way for our

members to communicate while separated due to the pandemic, and allowed newer members to more accessibly meet upperclassmen and those in leadership positions.

E. Industry and Professional Development Activities

Abstract: The industry and professional development activities offered by the UIUC BMES chapter focus on preparing our members for careers in industry or graduate school and providing our members networking opportunities. The industrial relations director and assistant industrial relations chair worked hard to organize multiple career development seminars. In the fall, the chapter organized several corporate presentations from large bioengineering-related companies. The chapter also implemented the above mentioned professional mentorship program and provided new career resources to students during the recruiting season. In the spring, several additional company-sponsored GMs were held along with professional workshops. The focus this year was to create new relationships with top companies and continue to foster existing relationships, as well as to improve the above mentioned professional mentor program. Professional development workshops and resources were expanded this year to connect students to former UIUC BMES members who have pursued career paths of similar interests, as well as supply students with materials to research and prepare for post-secondary educational opportunities. Given all the programs and opportunities created this year, the chapter is incredibly excited to expand and improve upon these in the coming year.

Corporate Presentations

Representatives from multiple companies presented during general meetings. These presentations covered possible careers for members in the specific company as well as career paths for bioengineers in general. This year, the chapter focused on having companies that members were highly interested in and were still recruiting despite the pandemic. We also concentrated on offering more opportunities with diverse companies to target the five tracks within our bioengineering curriculum, as well as to cover the major industries that bioengineers typically find jobs in. These industries include medical devices, pharmaceuticals, prosthetics, and healthcare support. This year, 4 of the corporate presentations included University of Illinois alumni who worked in the company, and 3 of these companies were represented by Illinois BMES alumni. The alumni were able to offer insight into their transition into the workplace and the level of preparedness they felt after receiving a very similar education.

Psyonic is a start-up out of UIUC that is developing low-cost, myo-electric prosthetics with sensory feedback. The founder and CEO, Aadeel Ahktar, gave an inspiring talk on his company's history and future plans while giving interactive demonstrations using their latest prototypes. AbbVie, Procter & Gamble, Becton, Dickinson, and Company, Medline Industries, and Abbott gave company overviews as well as presentations on internship and full-time openings. Many of

these companies are industry leaders, thereby giving our members opportunities to network and distinguish themselves for career opportunities. Between this year and previous years, BMES members have received full-time jobs and internships from all of the companies listed.

General Meetings	Date	Description	Attendance
Introductory GM	8/26/20	Introduction to BMES, with a presentation from PSYONIC	70
GM #2	9/23/20	Presentation by AbbVie	47
GM #3	10/13/20	Presentation by Procter and Gamble Co-hosted with UIUC's American Chemical Society	33
GM #4	11/11/20	Presentation by Becton, Dickinson, and Company	21
GM #5	2/3/21	Presentation by Medline Industries	33
GM #6	3/24/21	Presentation by Abbott	36

Career Resources

An addition to professional resources created in 2019-2020 was the implementation of a Career Fair Cheat Sheet and a Freshman Survival Guide. The Career Fair Cheat Sheet listed companies attending the career fair, their industry, and what day they would attend to help oriente BMES members to the overwhelming event. It was updated accordingly for each unique career fair. The Freshman Survival Guide contained basic professional notes and advice for those new to the job seeking process. Both of these documents needed significant overhaul to adapt them to the virtual environment. The new documents included how the technology for the virtual career fair worked, advice for messaging recruiters through the career fair platform, and how to more effectively leverage LinkedIn.

Career Development Workshops

Working with Engineering Career Services as well as some of our alumni of BMES, we hosted three career development events this past year. The first was graduate school focused, the second was industry focused, and the third was medical school focused. These three areas are the most commonly explored by our undergraduate students, so we tried our best to cater to what they would benefit most from.

For each of these events, we were able to either bring in speakers from the College of Engineering to share insight on how to navigate preparing for any of these three areas. We also hosted an alumni panel at each event to give students a chance to ask individuals currently working in roles our students hope to be in in the future. The purpose of these events is to help students explore these opportunities, help them decide which is best for them, and to learn about how to be successful in pursuing these various paths.

These events covered how to prepare for medical or graduate school/industry as well as what admissions/ recruiters are looking for. For the industry session, we went over resume and career fair tips for the students to implement during the spring engineering career fair.

Date	Description	Attendance
10/29/2020	Graduate School + Research Experience Undergraduate (REU) presentation	15 people
2/10/2021	Industry Information Session	14 people
3/10/2021	Pre-Med Information Session	12 people

During these events, resources and discount codes for Kaplan products were distributed to members via our website and weekly newsletter.

Graduate School Information Sessions

This year we introduced a few new events to give our members the opportunity to learn about post-secondary education opportunities and network with representatives from graduate schools. This was a fantastic opportunity to pursue during the pandemic, as many graduate school representatives would normally not be able to travel to present to our group exclusively, but were able to have valuable conversations with interested students over a virtual platform.

Meeting	Date	Description	Attendance
Grad Info Session 1	10/7/2020	Info Session on Northwestern's MS program in Biomedical Engineering	26
Grad Info Session 2	10/14/2020	Info Session on UC Berkeley/UCSF's Masters of Translational Medicine	12

LinkedIn Group

The biggest change to our professional offerings this year was the addition of a LinkedIn group to connect current members with University of Illinois BMES alumni. Within the first month, the group already exceeded 100 members. This group also aided in recruiting 10 additional alumni mentors for the professional mentor program who had not acted as mentors in the program's first year. The LinkedIn group provides another opportunity for current members and alumni to network and find career opportunities. It was especially helpful this year due to the reduced job opportunities for students caused by the pandemic. The LinkedIn group will only continue to grow and provide lasting benefits for its members.

F. Other Initiatives and Activities

Abstract: The UIUC BMES chapter is active in numerous campus wide activities. Relay for Life and Engineering Open House are two events that members of our chapter take very seriously. Relay for Life is a fundraiser for the American Cancer Society, which was canceled last year, but returned virtually this year. Engineering Open House (EOH) is an annual project fair for the College of Engineering at the University of Illinois. EOH was cancelled last year due to the pandemic, but it returned in a virtual format this year. The event took place on March 26th and 27th. Our society presented 14 projects virtually this year. The UIUC BMES chapter will continue to be heavily involved in both Relay for Life and Engineering Open House.

Relay for Life

Relay for Life is a fundraising event that supports the American Cancer Society. In the past, BMES members have raised over \$1,000 through multiple events throughout the semester. Relay for Life was virtual this year, and our BMES chapter was able to fundraise at a restaurant fundraiser, with registration for the event, and through donations. Although Relay for Life looked very different this year, we are happy our members were still able to participate and look forward to hopefully participating in person next year.

Bioengineering Student Advancement Committee

Recognizing the need for a centralized space that BioE students can go to for advice from fellow students and alumni, the Technical Director jumpstarted the Bioengineering Student Advancement Committee (BSAC) in the spring semester of 2020. The purpose of this committee is to build a Wiki forum that would provide Bioengineering students with a one stop shop for all their questions and concerns about bioengineering. In this space, students can find tips and tricks for getting started as a freshman, student perspectives on all bioengineering courses offered, lists of job placements for past alumnus and their perspectives on their current work, research testimonials from current students, internship testimonials from bioengineering students at

companies, and pre medicine advice for the common pre-med bioengineer. This year, the Technical Director and the committee worked with the department to delineate topics that can be posted on the website. We were able to revive the wiki page from several years ago and got the endorsement of the UIUC Bioengineering department to fully re-author the page. Proper editing permissions were set up, and we have started gathering resources and information so that the website will be ready for the incoming students in the fall of 2021.

Engineering Open House

Engineering Open House (EOH) is an annual student-run engineering fair spanning the College of Engineering that draws over 25,000 people to campus for a weekend in March. Hundreds of student teams and thousands of students across the College work on 250+ projects of interest in the months leading up to the event; these projects are then showcased in a manner appropriate for engaging visitors of all ages and experiences. As an outreach opportunity allowing students to explore topics that interest them and share their passion for engineering with thousands of members of the public, EOH forms the backbone of UIUC BMES’s Technical Projects division. This year, EOH was held virtually due to the Covid-19 pandemic. Teams had to take a video of their finished project and send it to the EOH central committee, who would then upload it to the EOH website.

Due to the virtual nature of EOH this year, there were fewer projects due to the feasibility of effectively demonstrating projects virtually, so there was a decrease in the number of EOH projects that BMES mentored this year. This year we had 13 projects which included over 60 student members spanning 6 different majors. Despite the pandemic being a hindrance to advertising EOH and BMES to incoming students (generally we would have engaging in-person events in the beginning of the year), BMES was still able to recruit many students for EOH. Of our 62 total EOH participants, 45 (or approximately 73%) were underclassmen. And although we had less than half of the total EOH participants of last year (130), we were able to increase the number of upperclassmen involved in the projects from 15 last year to 17 this year. The sizable proportion of upperclassmen involved allows for mentorship within the projects. Of these projects there is one multi-year Design Team that has been formed from EOH 2020 projects. Design Teams develop innovative solutions to real-world bioengineering issues, taking on more technically challenging and product-focused ventures.

A list of all the projects and a short description is provided below:

Project Name	Description	Members
The Chroma Glove	A new way to see: turning light waves into vibrations. Our glove provides tactile stimulation to differentiate between different RGB	5

	values to allow visually impaired people to “feel” color!	
Seeing CRISPR Clear	Our project “Seeing CRISPR Clear” consists of 2 parts: an interchangeable DNA base pair circuit model and an interactive app downloadable from the APP store, “Exploring CRISPR.” We want to share with others the impacts of CRISPR and explain the future potential of gene editing.	6
Metastabuddies	An education video explaining cancer cell metastasis. Follow along with our at-home activity to simulate this process firsthand.	4
Mission Chill: The Blanket That Cools	We created a temperature-dependent cooling blanket for patients suffering from heat-related illnesses, and have a tasty at-home activity to demonstrate thermodynamic concepts!	5
Modeling XNAs	Modeling futuristic nucleic acids through an interactive website! Watch to learn about XNAs and use our model!.	4
Building a Better Shoe	Plantar fasciitis effects over 33 million people in the United States. We set out to build a shoe that can combat plantar fasciitis.	5
Compost-A-Glove	We designed a biodegradable disposable glove for medical use, with the hope of reducing overall plastic waste and preserving the environment.	7
Modeling Scoliosis	Scoliosis is common across the country, but it can be hard to understand what it really means without seeing it for yourself! This project shows 3D comprehensive models of a spine with scoliosis and an unaffected spine to help viewers understand how scoliosis can affect physiology, as well as gain a better understanding of what scoliosis is.	5
Determining Emotions through a Photo	Emotional intelligence is *definitely* not a strong suit of machines. But using machine learning techniques to build an emotion recognition model, our group developed an Android app that accurately detects the emotion displayed by the user in a photo.	4
Cockroach Technokinesis	We explore the applications of a brain-computer interface by pairing an EEG headset with a cyborg cockroach. Will we be able to control a cockroach using only our minds?	4
Covid Remote Health Monitoring - Design Team (subproject)	COVID-19 has caused a surge over the past year to invest in remote, contactless health monitoring from temperatures to respiratory rate. Check out our exhibit where we showcase new developments in remote health monitoring.	3
Biomimicry:	This exhibit models an affordable prosthetic robotic hand that mimics	5

Robotic Hand	human motion. This hand demonstrates how engineers can be inspired by human anatomy and inspire future generations of engineers with a similar project for kids at home.	
Shazam: The E-Nose	Come learn about your olfactory senses and the applications of a digital nose!	5

Project brainstorming and preparation began this past September, with team leaders receiving plenty of guidance in team management, project direction, resources, and more from our chapter's Technical Director and team of student EOH Advisers. All projects were developed from scratch by their respective teams, allowing members to delve into topics they found interesting and build their exhibit by gradually moving through the design process.

The Technical Director also organized a Workshop Committee to develop workshops teaching members valuable technical skills (e.g. MATLAB, Arduino), connect them to valuable resources, and train them in public speaking and presentation to large groups of people. Most of our workshops this year were done virtually through Zoom with the exception of the Arduino workshop, which was conducted in-person. All Covid-19 safety guidelines were followed in this in-person workshop.

ImageJ Workshop - Virtual	10/01/20	12 attendees
Design-a-Thon - Virtual	10/03/20	18 attendees
MATLAB Workshop #1 - Virtual	10/21/20	14 attendees
MATLAB Workshop #2 - Virtual	11/04/20	14 attendees
Python Workshop in partnership with Woman in Electrical and Computer Engineering (WECE) - Virtual	11/12/20	5 attendees
Arduino Workshop in partnership with American Society of Mechanical Engineers (ASME) - In-Person	3/30/21	9 attendees

IV. National BMES Meeting

Abstract: Seven undergraduate UIUC BMES members attended the Virtual National BMES Meeting this year. Two attending members were from the executive board, the President and Vice President. Two of our members presented during the poster sessions and many also participated in networking activities at the meeting, allowing our chapter to expand its presence beyond the UIUC campus. Furthermore, the presentations and poster sessions allowed our members to gain insight on current biomedical research, industrial expansions, and graduate school opportunities. In the future, our chapter would like to have more students attend the various programs available at the meeting.

Attendance

The following undergraduate students attended and participated in the 2020 National BMES Meeting as representatives of the UIUC BMES chapter:

Name
Berat Gulecyuz
Courtney Ketchum
Elisabeth Martin
Ege Gungor Onal
Yan Luo
Joy Chen
Caroline Fatina

Technical Track

Our attendees represent a diverse group of undergraduate researchers, each representing a unique field of biomedical research. Listed below are titles of each presentation or poster.

Name	Abstract Title
Elisabeth Martin	Optimization of Blob Detection Algorithm for Analysis of Fluorescence Lifetime Imaging Microscopy (FLIM) of Extracellular Vesicles

Yan Luo	Label-Free 3D Digital Holographic Imaging of Apoptosis Processes in Human Breast Cancer Cells
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V. Future Directions

Abstract: The UIUC BMES chapter has several goals for the coming year that will continue to help grow our chapter and better serve our members and the biomedical engineering community. Future directions for our chapter include continuing to increase attendance and member retention across our event offerings, improving new member comfort, increasing the field of study diversity, and safely creating a deeper sense of community.

Membership Growth and Retention

Our chapter plans to continue to work to increase member participation. We have recently added a Director of Recruitment to our executive board for next year who will be responsible for planning recruitment events to kick off the year and stay in constant contact with younger members to encourage their presence. We plan to have an anonymous feedback form in the newsletter every week so that the executive board can ensure that we are constantly improving and cultivating events that our members are interested in. We hope that learning about our membership and tailoring our events accordingly will in turn increase attendance and member participation in our chapter.

New Member Comfort

The executive board realizes how crucial new member involvement is to the future success of our organization. We also recognize how difficult the transition from high school to college is and how difficult joining new clubs can be. To ease this transition, the executive board is planning to have a new member social at the beginning of the fall semester in which we will explain in depth how the club operates, what member expectations, responsibilities, and time commitments are for activities that we offer, and explain many of the commonly used acronyms. It is our hope that by explaining many of the frequent sources of confusion early on, new members will feel more welcome and excited about the opportunities within our club. This will also give the executive board an opportunity to connect with the younger members, encourage their involvement, and allow the board to become more approachable in the future.

Field of Study Diversity

A vast majority of the members within our club are Bioengineering students. Although expected, we recognize that there are many other students in other fields with an interest in Biomedical Engineering such as biology, chemistry, mechanical engineering, industrial engineering, material science and engineering, nuclear engineering, electrical engineering, etc. In the workforce,

biomed companies are highly diverse environments, and we would like to better reflect that in our organization. The Director of Recruitment will additionally be responsible for increasing BMES membership outside of the Bioengineering department. This will be accomplished through campus events such as Quad Day (student organization fair) and advertising our club in lectures through other departments outside of Bioengineering.

Safely Fostering Community

As it will be safer to meet for in-person events in the fall, our club currently plans to meet as frequently as possible while still ensuring the safety of our members. We plan to take necessary precautions such as social distancing and wearing masks while bringing our members back together after the extended hiatus. We plan to offer our events in a virtual setting as well when possible to accommodate members who do not feel safe to join us in-person. Our goal is to have one social event per week whether in-person or online to create a sense of community as many of our members have never seen each other in person and have not had the opportunity to network with each other. In addition to social events, we plan to increase the amount of outreach events, technical opportunities, and general meetings from last year. Many of our members were suffering from Zoom fatigue this past year, so we are hoping to bring a new energy to next year's events.