Ohio State University Renewal Document

Faculty Advisors

Name	Email Address	Member ID
Dr. Mark Ruegsegger	Ruegsegger.1@osu.edu	11005
Dr. Alexis Ortiz-Rosario	Ortiz-rosario.1@osu.edu	4004989

Student Members

New membership names in bold

Member Name	Position (If Applicable)	Email Address
Arnav Divekar	Co-President	Divekar.6@osu.edu
Aneesh Zutshi	Co-President	Zutshi.4@osu.edu
Shivangi Mohta	External Vice President	Mohta.9@osu.edu
Stephen Piatkowski	Internal Vice President	Piatkowski.4@osu.edu
Mihir Joshi	Projects Chair	Joshi.373@osu.edu
Sam Harmeyer	Secretary	Harmeyer.23@osu.edu
Austin Carlin	Social Chair	Carlin.105@osu.edu
Celine Ertin	Professional Development Chair	Ertin.3@osu.edu
Grant Schrieber	Treasurer	Schrieber.2@osu.edu
Louie Melaragno	Marketing Chair	Melaragno.50@osu.edu
Neil Thakkar	E-Council Representative	Thakkar.123@osu.edu
Ervin Cui	E-Council Representative	Cui.676@osu.edu
Rachel Horvath	EHIRS Co-Chair	Horvath.269@osu.edu
Abhishek Shah	EHIRS Co-Chair	Shah.1478@osu.edu
Kate Mallek	Special Initiatives Co-Chair	Mallek.6@osu.edu
Hannah Mullany	Special Initiatives Co-Chair	Mullany.5@osu.edu

Ethan Hessick	Outreach Co-Chair	Hessick.4@osu.edu
Jinju Kim	Outreach Co-Chair	Kim.8301@osu.edu
Anna Wang	Faculty Liaison	Wang.12213@osu.edu
Cecilia Groves	Diversity & Inclusion Chair	Groves.219@osu.edu

Website Link: osubmes.org

Free Member Information:

Member Name	Position (If Applicable)	Email Address
Maariyah Ahmed	Corporate Relations Liaison	Ahmed.710@osu.edu

The Biomedical Engineering Society at The Ohio State University

Chapter Development Report

2021-2022



The Ohio State University's Chapter of the Biomedical Engineering Society has grown significantly and become more diverse in the opportunities that we provide for our members. We have provided events for our members through the following areas: mentorship, professional development, social events, community outreach, and hands-on projects. One of our continuous goals as a chapter is to improve upon the previous year's accomplishments and create new initiatives for our members. Over the 2021-2022 academic year, our chapter increased attendance rates within the mentorship program by 25%, created three new outreach collaborations with Columbus schools, and strengthened industry relations through a new company sponsorship program. This year presented another unique challenge with the constant changes in COVID-19 university guidelines between virtual and in-person events, however, we were able to seamlessly transition all our smaller events to a safe in-person environment throughout the academic year, offering our members a chance to see each other in person. Additionally, we continued our larger events in an online format and managed to expand the opportunities offered. The Engineering in Healthcare Industry and Research Symposium (EHIRS) was once again held in a virtual environment but grew to a two-day event and featured over 300 attendees, including 20 different universities and over 10 different companies. We also added a Stem Day event preceding Sculpting Your Future, our annual Women's empowerment event, where local middle school and high school girls were able to learn more about the opportunities offered in biomedical engineering. Throughout the year, the new company sponsorship program ensured all our professional development events featured strong industry support from 12 different companies including Johnson & Johnson, Battelle, and Epic. All of our current and past initiatives serve our ultimate goal for the upcoming year which is to provide events that support our members and their development.

Please direct all questions about The Biomedical Engineering Society at Ohio State's Chapter Development Report to Arnav Divekar and Aneesh Zutshi.

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Dear Student Chapter Award Committee Members,

The Biomedical Engineering Society at Ohio State has continued to develop an environment in which members are able to utilize professional connections, create meaningful peer relationships, and spread their love for biomedical engineering to the neighboring communities. This past year, our chapter focused on developing a corporate sponsorship program to increase collaboration with the industry, premiering the first professional development skill workshop events, improving upon the outreach in the Columbus community, and expanding The Engineering in Healthcare: Industry and Research Symposium (EHIRS) into a two-day symposium with separate days for research and industry interests.

Our chapter has been working to increase our partnership with industry as it continues to be heavily demanded by our members. This year, our partnerships were furthered by initializing a corporate sponsorship program. The leadership team developed a sponsorship packet to clearly define company benefits and motivations to collaborate with students. This initiative was able to attract over ten companies within our first year as we look to expand in the future. Our chapter also increased professional development (PD) through PD skills workshops series throughout the semester consisting of an ECG engineering workshop and robotic surgery workshop in collaboration with the Ohio State Wexner Medical Center. Our largest event of the year, EHIRS, was further expanded this year to a two-day symposium consisting of an industry and research-oriented keynote speaker, industry panels, company recruiting sessions, and undergraduate / graduate student poster sessions.

One focus for our chapter this year was to increase our outreach opportunities and create an interest in STEM for younger students in the Columbus area. Despite COVID-19 regulations throughout the year, we were able to successfully conduct events with new schools this year through the STEMPossible event and OSU Stem Day event. Both of these events included students from over five different schools around Columbus with diverse age groups that were able to witness biomedical experiments and fun projects to spark an interest for STEM. We were able to engage several faculty from Ohio State as well to show scientific experiments to over 25 middle and high school students at the OSU Stem Day event.

One area of improvement for the upcoming year is enhancing mentorship experience for students interested in various career paths by utilizing our connections at Ohio State and the alumni database. We will introduce two new mentorship programs: graduate school and medical school. This will enable current BMES members to connect with current graduate and medical school students throughout the year and retrieve advice for application processes, resume building, and overall career guidance. Additionally, we have added a Diversity/Inclusion officer position to lead our initiative of including more diverse panels and events throughout the year, as well as increasing involvement from underrepresented groups in the chapter.

We have been able to achieve numerous accomplishments and initiatives this year which have been detailed in the document below for further reference.

Sincerely,

Dr. Mark Ruegsegger and Dr. Alexis Ortiz-Rosario

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I. Administrative Report

The BMES chapter at The Ohio State University (OSU) aims to improve the professional and social opportunities for over 250 members. It offers opportunities through monthly general body meetings, various events, and impromptu meet-ups. These opportunities are planned together by a pool of 20 officers and their subsequent committee members. Within the officer pool, the external and internal vice presidents oversee the other respective professional and social officer roles. This system is combined with the overall supervisory role of the co-presidents, allowing for multiple checks of each event before it is offered to our members. Furthermore, bi-weekly officer meetings are held where officers can present event ideas to their peer officers to receive a wide range of ideas and feedback. Overall, the leadership structure and management system in place allows us to plan the best possible opportunities for our members.

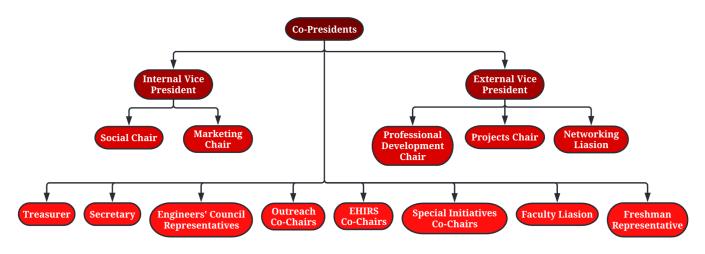
I-A. 2021-2022 Officers

Title	Name	Email	Responsibilities
Co-President	Arnav Divekar	Divekar.6@osu.edu	Oversee officers
Co-President	Aneesh Zutshi	Zutshi.4@osu.edu	Oversee officers
Internal VP	Ellie Guilfoyle	Guilfoyle.16@osu.edu	Execute mentorship program
External VP	Kate Mallek	Mallek.6@osu.edu	Oversee events involving companies
Secretary	Cecilia Groves	Groves.219@osu.edu	Create weekly newsletter
Treasurer	Grant Schrieber	Schrieber.2@osu.edu	Record operating budget
Marketing Chair	Mihir Joshi	Joshi.373@osu.edu	Run social media accounts
Social Chair	Michael Kaltman	Kaltman.3@osu.edu	Host socials and intramurals
PD Chair*	Maariyah Ahmed	Ahmed.710@osu.edu	Organize PD events
Projects Chair	Natalia Mendonca	Mendonca.10@osu.edu	Plan Bio-Hack event
EHIRS Co-Chair **	Shivangi Mohta	Mohta.9@osu.edu	Run EHIRS 2022
EHIRS Co-Chair **	Stephen Piatkowski	Piatkowski.4@osu.edu	Run EHIRS 2022
SYF Co-Chair***	Tasha Bruner	Bruner.103@osu.edu	Plan SYF event
SYF Co-Chair***	Hannah Mullany	Mullany.5@osu.edu	Plan SYF event
Outreach Co-Chair	Jad Hussein	Hussein.112@osu.edu	Organize community events

Outreach Co-Chair	Maddie Reidl	Reidl.7@osu.edu	Organize community events
E-Council Rep.	Celine Ertin	Ertin.3@osu.edu	Attend OSU E-Council meetings
E-Council Rep.	Nikhil Nandyala	Nandyala.7@osu.edu	Attend OSU E-Council meetings
Networking Liaison	Pratima Prabala	Prabala.2@osu.edu	Host networking speaker series
Faculty Liaison	Anna Wang	Wang.12213@osu.edu	Attend OSU faculty meetings
Freshman Rep	Brian Foster	Foster.1373@osu.edu	Receive new member feedback

^{*} Professional Development

Officer Organization



I-B. Membership

Chapter Membership	Actively Participating Members	National Membership
260 students	205 students 78.8%	41 students 15.8%

^{**}Engineering in Healthcare: Industry & Research Symposium

^{***}Sculpting Your Future

I-C. General Body Meeting Information

General Body Meetings & Speaker Series

Date	Attendance	Name (Speakers) - Description
09/02/2021	120	Kickoff Meeting (Arnav Divekar, Aneesh Zutshi, Dr. Mark Ruegsegger, and Dr. Alexis Ortiz-Rosario) – BMES chapter overview and events for potential members
10/04/2021	54	October General Body Meeting (Arnav Divekar, Aneesh Zutshi, and Celine Ertin) - Upcoming events, including an in-depth overview of upcoming Community Interns event with Medforall
11/04/2021	35	November General Body Meeting (Arnav Divekar, Aneesh Zutshi, and Biosense Webster Representatives) - Biohack recap, upcoming events, and presentation from Biosense Webster Representatives
01/25/2022	46	January General Body Meeting (All Officers) - Upcoming events, undergraduate research opportunities, member appreciation, and officer election information
02/24/2022	32	February General Body Meeting (Arnav Divekar, Aneesh Zutshi, and Officer Election Candidates) - Upcoming events and officer elections
03/08/2022	33	March General Body Meeting (Arnav Divekar, Aneesh Zutshi, and Epic Systems Representative) - February recap, upcoming events, and presentation from Epic Systems

I-D. Officer Meeting Information

Summer 2020 Meetings

Date & Time	Agenda
06/13/21 2:00 pm	Discuss pre-semester goals and new initiatives for the upcoming year. Brainstorm new ideas for marketing, transition to in-person events, and room reservations.
07/11/21 2:00pm	Organize BMES National Meeting Logistics and travel with Ohio State department. Plan materials for Fall involvement fair and general body kickoff meeting, EHIRS Planning
08/08/21 2:00 pm	Initiate planning for EHIRS event and discuss expansion to two-day conference. Organize smaller details for opening kickoff general body meeting and Fall involvement fair. Discuss new corporate sponsorship plan and how to reach out to companies.

2020-2021 Academic Year Meetings

Date	Agenda
08/29/2021	Planning for beginning of year logistics, Organizing Fall Kickoff Meeting sign in and membership registration process, Discussing new website and updates to social media accounts, Creating committee applications
09/12/2021	Finalizing calendar for fall semester events and create room reservations, Discussing strategies to recruit more companies for sponsorship program, Planning resume review event collaboration with other Ohio State engineering student organizations
09/26/2021	Preparing for National BMES Event, Finalize logistics for Networking Night event and company involvement, Discussing development of networking database to implement on website
10/03/2021	Planning mentorship and social events, Discussing Zoom environment concerns, Preparing for faculty and industry involvement in BioHack, Organizing fall intramural sports and registration process
10/24/2021	Finalizing BioHack event details and food/beverages, Planning medical school panel (virtual), Discussing outreach opportunities in collaboration with Society of Women Engineers (SWE), Discuss Johnson & Johnson recruitment event
11/07/2021	Discussing feedback from BioHack event and company sponsorships, Planning ECG skills workshop, Preparing for mental health awareness event
12/05/2021	Preparing for Engineering in Healthcare: Industry & Research Symposium (EHIRS) and inviting other BMES chapters, Finalizing calendar for spring semester events, Organizing social de-stress event during finals week
01/16/2022	Preparing for Spring Semester (EHIRS and Sculpting Your Future), Creating interest forms for spring intramural opportunities, Brainstorming outreach opportunities with Columbus high schools
01/30/2022	Planning Elections and officer application processes, Finalizing EHIRS and checking in with keynote speakers, Applying for organizational awards at Ohio State University
02/13/2022	Creating Standard Operating Procedures (SOPs) to facilitate smooth officer transitions for next year, Planning social event for general body, Discussing budget for rest of spring semester
02/27/2022	Debriefing EHIRS, Preparing for Sculpting Your Future, Discussing timeline and format of BMES chess tournament, Preparing recruitment events with KLS Martin and Epic Systems

03/20/2022	Finalizing Sculpting Your Future, Discussing officer transitions and new officer leading first events, Debriefing on updated website and newsletter formats, Organizing presenters for capstone preview event for freshmen
04/03/2022	Debrief Sculpting Your Future, Plan End-of-Year Mentorship Events, Reviewing overall interest and involvement from intramural sports, Planning format for summer meetings and improvements to be made in upcoming fall semester

II. Treasury Report

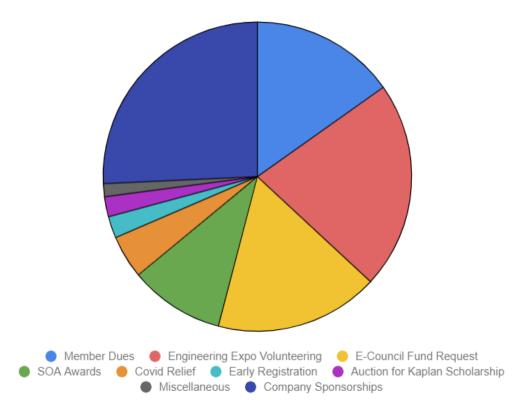
The items listed below include funding and expenditures between 05/18/2021 and 04/17/2022.

As the rules and regulations on Ohio State's campus relaxed, BMES at OSU saw an upsurge in membership participation in all aspects we have to offer. Whether it was through our mentorship, professional development or social programs, we were all able to socialize more effectively in person over some tasty treats and drinks. However, to accommodate this increase in involvement, our expenditures almost doubled from the previous year. We saw increases in all areas of operating expenses and BMES at OSU still hadn't returned to normal operating procedures. Our biggest event, Engineering in Healthcare: Industry & Research Symposium (EHIRS) was held virtually (we hope to host it in person next year). We were able to combat the increased expenditures with the new company sponsorship program as well as funding from awards received at the University level. However, in future years our funding may decline since we will no longer receive the extra financial support from the university due to the COVID-19 pandemic. Therefore, we plan to maximize our funding in the future and use our savings from this year to finance our transition to in-person EHIRS.

II-A. Sources of Funding

Funding for the 2021-2022 School Year

Source	Total
Member Dues	\$3,359.14
Engineering Expo Volunteering	\$4,800.00
E-Council Fund Request	\$3,800.00
E-Council: SOA Awards	\$2,200.00
E-Council: Covid Relief	\$1,000.00
E-Council: Early Registration	\$500.00
Kaplan Auction	\$465.00
Company Sponsorships	\$5,690.00
Miscellaneous	\$1,745.00
TOTAL	\$22,114.14

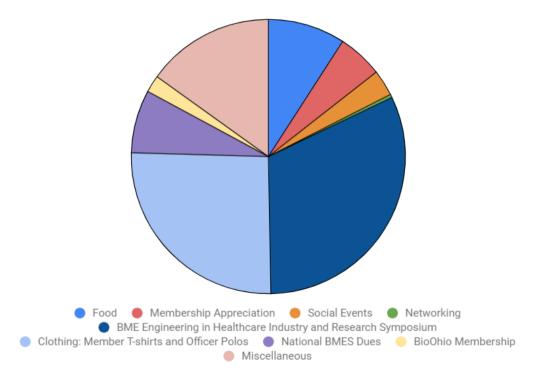


Sources of Funding for the 2021-2022 School Calendar Year

II-B. Expenses

Expenditures for 2021-2022 School Year

Source	Total
Food	\$1,545.22
Membership Appreciation	\$897.25
Social Events	\$519.58
Networking (including Networking Night event)	\$64.99
BME Engineering in Healthcare Industry and Research Symposium	\$5,381.69
Clothing: Member T-shirts and Officer Polos	\$4,350.21
National BMES Dues	\$1,260.00
BioOhio Membership	\$342.00
Miscellaneous	\$2,553.70
TOTAL	\$16,914.64



Expenditures for the 2022-2023 School Calendar Year

III. Chapter Activities

We held a variety of events including mentorship, professional development, social, and outreach to provide a holistic experience for our members. The social events were brought back in-person this year and featured new successful initiatives such as intramural teams and a year-end banquet which helped us achieve the highest attendance and retention rates in the chapter's history by creating bonds between members. These relations were also developed through peer mentorship activities where members were placed on teams and families which competed throughout the year for points to receive winning prizes. Our outreach events were expanded this year with the new OSU Stem Day event and lab demonstration to schools in Columbus including Dublin Coffman High School. Professional development was one of our main focuses for expansion this year with the addition of a Networking Database, PD Skills Workshops, and Networking Speaker Series in addition to the industry panels, resume reviews, and healthcare conferences that we host every year. These events were extremely useful by helping members receive internship opportunities and developing networking skills to become attractive candidates for medical device companies.

III-A. Social Activities

Social activities are an invaluable part of our BMES chapter as we strive to connect students outside of the classroom. This year, we had a focus on ensuring that members of all school years stayed involved in BMES social events. Furthermore, we organized events that encouraged connecting members of all ages so the holistic interests of our chapter were represented. As in-person events became a possibility this year, we wanted to take full advantage of this opportunity to facilitate fun, safe, and accessible events for everyone. As the

circumstances of the pandemic varied throughout the semester, we strictly followed university and state guidelines to provide safe experiences for all members. Furthermore, we collaborated with mentorship to build a BMES social community for members both in and outside of mentorship families. Lastly, we continued to keep our chapter informed through Instagram, Slack, and weekly email updates. This year was a positive step towards reconnecting our chapter post-pandemic and we look forward to continuing this momentum in future years.



OSU Student Organization Involvement Fair

The officers of The Biomedical Engineering Society at Ohio State hosted an in-person booth at Ohio State's annual student organization fair to recruit new members to our chapter. Students were given the opportunity to learn about BMES and ask officers any questions about BME and BMES. All interested students had their contact information recorded and were invited to the BMES kick-off meeting.

Date/Location	Audience	Attendance	Cost
8/22/21 4:00 PM - 7:00 PM Oval	All OSU students	33 attendees	\$30

Fall Kick-Off

One of our biggest events of the year, the Fall Kick-Off brings our officers and general body together to celebrate the new school year. This event provides an opportunity for members to meet the new officers and a place for the chapter to connect after a long summer! This year the event was in-person and outside with pizza, spikeball, football, soccer, corn hole, board games, and more!

Date/Location	Audience	Attendance	Cost
Fontana Labs September 2nd, 2022 7pm	All BMES members	110	\$222.47





BMES Speed-Meeting

This event provided a fun opportunity to meet new people in the BMES community! We held a speed-meeting where we rotated in small groups to meet over 10 new people in this fun, fast-paced event.



Date/Location	Audience	Attendance	Cost
September 23, 2021	All BMES members	20	N/A
6pm	All DIVIES members	20	IN/A

BMES Goes to Top Golf

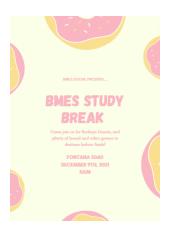
The officers went to Top Golf for a mid-semester celebration! This trip provided an officer bonding opportunity and an enjoyable brainstorming and planning session for the rest of the semester. This also allowed for the newly-elected freshman representative officer to meet his fellow officers in an informal setting.



Date/Location	Audience	Attendance	Cost
November 7, 2021 4pm	BMES Officers	10	\$420

Reading Day Social Study Break

To provide a fun way to shift students' focus away from the stress of finals, BMES hosted a study break! Of course no study break is complete without the local Buckeye Donuts, so plenty were provided to refuel. A variety of board games and video games were available for everyone to connect and relax at this event. This event offered students the opportunity to take a break from studying for the finals that were in the weeks ahead.



Date/Location	Audience	Attendance	Cost
December 9, 2021 11am	All BMES members	17 attendees	\$75

Cookies and Cocoa

In the never-ending Ohio winters, hot chocolate and cookies are a fan favorite. We hosted a cookie design competition to see the true artisanal cookie decorating abilities of our BMES community. Members from mentorship families and the general body came together to stay warm and enjoy some sweet treats in the middle of the week.



Date/Location	Audience	Attendance	Cost
February 22, 2022 6:00pm	All BMES members	23 attendees	\$55

Late-Night Zumba Workout Classes

OSU hosts late-night zumba workout classes that are accessible to any interested students. BMES took advantage of this fun opportunity and arranged trips with officers and general body members. This provided a unique social opportunity to go with members every few weeks throughout the semester and gave us a chance to show off our dance moves.



Date/Location	Audience	Attendance	Cost
Multiple dates 9pm	All BMES members	5-8 per class (5 classes)	N/A



BME-CHESS Competition

Inspired by the craze of Queen's Gambit, we hosted a BMES chess tournament! Through the tournament, members played a bracket-style virtual chess match against one another over the course of a week and a half. The tournament concluded with an intense in-person chess match for everyone to spectate!

Date/Location	Audience	Attendance	Cost
Feb 28th - March 9th	All BMES members	16 participants	\$30
Virtual and In-Person	All BMES members	16 participants	\$30

BMES Intramural Sports Teams

BMES hosted five intramural sports teams to play against other students in volleyball, soccer, and basketball! While facing tough competition, many of our teams made it to the playoffs. Each week, 10-20 students played their sport of choice and many more BMES students were there to spectate and cheer on our athletes!

Date/Location	Audience	Attendance	Cost
Various dates and times throughout the semester. ~5 games per team per sport	All BMES members	Volleyball: 20 Soccer: 35 Basketball: 18	N/A





BMES North Market Trip

In order to provide an opportunity for new and old officers to meet with one another, BMES officers took a trip to a local favorite spot - North Market! Enjoying the beautiful weather and a local park, we had a fun time passing the 'BMES torch' to our newly elected officers. Furthermore, we had a celebration to thank and congratulate our graduating seniors.



Date/Location	Audience	Attendance	Cost
April 10th, 2022	BMES Officers	18	\$110
12pm	211122 0111411	10	Ψ110

BMES Year-End Banquet

In order to celebrate the phenomenal year we have had, BMES hosted the first ever BMES Banquet for all of our members! The officers and general body had the opportunity to vote for members to receive superlative awards such as 'Funniest Member', 'Most likely to be CEO of a BioTech company', and 'Best Networker'! This event also featured awards to recognize outstanding general members, officers, and advisors who contributed significantly towards the chapter this year.

Date/Location	Audience	Attendance	Cost
April 21, 2022 5:30pm	All BMES Members	30	\$550





III-B. Inter-Chapter Activities

The Ongoing COVID-19 pandemic continued to cause emotional and physical isolation. The Ohio State chapter recognized that this isolation is something which not only existed between members of our own chapter but members of other chapters as well. Additionally, a lot of the inter-chapter relationships which had developed at the annual meeting or various retreats were strained. Our chapter made it a priority to collaborate with other BMES chapters in an effort to address this isolating and rekindle our inter-chapter relationships.

Despite the virtual requirement, we were still able to maintain the inter-chapter connection through social events. The second annual Battle of the Brains event was carried out involving students from 10 different BMES chapters such as Ohio State, Toledo University, Purdue University, and University of Illinois - Urbana Champaign. This year it was integrated with our annual Engineering in Healthcare: Industry and Research Symposium to ensure an opportunity for students to collaborate with one another at the event. Lastly, our chapter also maintained its attendance at the Annual Meeting and was able to send 8 officers to attend in-person this year.

BMES Annual Meeting

The Ohio State chapter utilizes the Annual Meeting to connect with and learn from other BMES chapters. The attending officers make it a priority to meet with members of other chapters and ask them questions about their chapter's operations. Furthermore, they strive to form friendships with these members by asking them to hang out at certain events like the BMES Bash. Through forming a closer connection than a simple acquaintance, our officers are able to make connections with other chapters that last past the Annual Meeting and allow us to collaborate with one another throughout the year. This year, our chapter was honored with the Outstanding Mentorship Award. This gave us the unique opportunity to share our own practices with other chapters and contribute to their initiatives. Furthermore, serving on the panel allowed our attendees to connect with representatives of other top chapters and learn about their practices in a more intimate setting. Lastly, our members used the Annual Meeting to develop their own personal career goals through attending research presentation, graduate/industry workshops, and diversity and inclusion luncheons. Specific lectures and workshops attended may be found in the Nationals BMES Meeting section later in the document.

*Cost covered by OSU and BMES

Date/Location	Audience	Attendance	Cost
10/06/21 to 10/09/21 Orlando, Florida	BMES Officers	BMES members in attendance of Annual Meeting (shown in Nationals section)	\$4,000*





Battle of the Brains

Members from different chapters of BMES came together to socialize and play trivia. The meeting was held during our 7th annual Engineering in Healthcare: Industry and Research Symposium over Hubilo and a Kahoot was used to play trivia. There was friendly competition and members from all chapters had fun joking around with each other. There was one Kahoot that was science history themed.

Date/Location	Audience	Attendance	Cost
2/19/22, 1:30PM Hubilo	BMES members from Ohio State, The University of Toledo, and University of Illinois at Urbana - Champaign, and other chapters that attended EHIRS	25 total attendees, 10 Ohio State chapter attendees	N/A

III-C. Outreach Activities

In an increasingly science and technology-driven world, BMES at OSU understands its responsibility of inspiring young people to succeed in their early educational careers. We have used our position as one of OSU's highest-awarded engineering organizations to impact the Columbus community, collaborating with various middle and high school programs to expose young students to biomedical engineering. We have also expanded our efforts to finding and creating volunteer opportunities within our community, in order to provide volunteer hours for our members and emphasize the importance of giving back to the community. We continued with virtual outreach opportunities to provide safe, distanced activities that were still able to be focused on teaching others about Biomedical Engineering. Our activities involved guiding students through building engineering models and giving virtual lab demonstrations. For volunteering, outdoor park cleanups were hosted in smaller groups and with safe social distancing in order to provide some in-person opportunities.

Metro Early College High School Tutoring



BMES members gave back to local high school students through tutoring math and science classes including calculus, biology, chemistry, and physics. We have sustained a six-year relationship with Metro Early College High School, where we continued our weekly schedule in order to have a more continuous, impactful effect on the student's learning. Overall the Metro students have felt this model helps them feel more comfortable and allows them to get more out of

regular tutoring. We also implemented a tutoring-topic request form for the Metro students. Students could fill out the form prior to attending a tutoring session to inform the tutors what concepts or course content they were seeking help with. We have a strong relationship with Metro High School, and will continue our tutoring program with them next year.

Date/Location	Audience	Attendance	Cost
Ongoing, Metro Schools	All BMES members	6 involved members	N/A

STEMpossible Middle School Science Club



The OSU chapter started a new relationship with STEMpossible, a middle school aged after school program that teaches students about the world of STEM. We collaborated with the leaders of the organization to create virtual activities that explored the various engineering disciplines within STEM. We were able to partner with a fellow Ohio University student organization, Society of Women Engineers (SWE), to host the virtual event and teach the students about engineering. We started with an introduction of biomedical engineering, along with what BMES is as organization. Five activities were then

completed, centering around a different engineering principle for each. The event had highly positive feedback, and we will be continuing our relations with this organization in the future.

Date/Location	Audience	Attendance	Cost
10/28/2021, 3-5 p.m. Virtual	STEMpossible members	6 involved members	N/A

Columbus Parks and Recreation - Volunteer



BMES Outreach started its first year of organizing and hosting volunteer events for its members. As Outreach requires volunteers for its events naturally, these events are not focused on social engagement and are simply for giving back to the community. Two volunteer events we were able to host this year were through the Columbus Parks and Recreation organization. Our events were park cleanup events, where we walked the length of the park property and picked up any trash and waste and disposed of it properly.

Date/Location	Audience	Attendance	Cost
9/19/2021, 4/24/2022 Tuttle Park	BMES Members	8 BMES Members	N/A

Dublin Coffman High School Research Demonstration

BMES Outreach began a new relationship this spring with the Dublin Coffman High School in preparing an event for their two AP Biology classes. In collaboration with graduate students in Dr. Natalia Higuita-Castro's Nanomedicine lab, our chapter organized a research presentation and associated lab demonstration on genetic therapies and cell transfection techniques through zoom. The lab demonstration included a recorded demonstration of bulk electroporation, as well as a live cell counting demonstration. Given that the students had recently learned about bacterial transformations, the presentation was prepared in a way that connected the students curriculum with current lab techniques, such as plasmid amplification, and the scope of mammalian cell transfections. In addition to the live lab demonstration, students were able to visualize cells under a microscope, before and after trypsinization, and got a preview of common lab equipment used for cell culture. The event had very positive feedback, and we will be continuing our relations with this organization in the future.

Date/Location	Audience	Attendance	Cost
03/21/2022 Online	Dublin Coffman AP Biology Class	20	N/A

III-D. Mentoring Activities

BMES mentorship was very excited to offer a hybrid environment this year, which was essential to making and maintaining connections with people both comfortable and uncomfortable with meeting in person. Our chapter's mentorship program helps underclassmen navigate making friends, classes, and adjusting to college life, while giving people a community in which they feel safe and accepted. This year, we sought to increase connection between members of the organization overall, not just members of the individual mentorship "families." To achieve these goals, we focused on three major things. First, we implemented the formation of four "teams," (~16 people each) which was a group of 4-5 "families" (~3-4 people each). We also chose to put on events that allowed people to escape the stress of college and get people talking, joking, and laughing to develop and strengthen bonds between members. Lastly, we incentivized families to meet up and give advice outside of the mentorship events in order to help underclassmen get the individual coaching through college they needed. The participation this year grew 40%, increasing to 63 members in the program.

Maintaining Involvement

The first improvement to maintaining involvement this year came with matching mentees with mentors. Mentees had a chance to meet their prospective mentors through "Mentorship Week," (described further in the events section), and were able to preference which mentor they thought would be the best match for them socially and professionally. Additionally, sorting the "families" into larger "teams" helped members maintain involvement because even if their families were not attending events, they knew someone on their team would be there to sit near and talk to, making events less intimidating. The chapter also encouraged independent family or team meet-ups either in- person or virtual. These events were important for mentors to be able to

give advice to their mentees. Smaller group settings allowed mentees to ask more specific questions and get more advice specifically tailored to their career goals.

In addition, we developed the weekly "mentorship monday" for the mentorship program. This was another effort to give members the feeling that they are truly valued, regardless of their current level of involvement in the program. This encouraged mentors and mentees to hang out outside of the BMES official meetings. These spotlights were sent in our weekly newsletters and posted to our instagram account. Feedback surveys were taken after each event along with midand post-semester. These helped us determine areas of mentorship people were happy with and areas that needed improvement, and gave each member a voice in the program.





Example of the Member Monday from the newsletter (left) and another team meet-up (right).

The Competition

This year, the competition slightly changed to further improve member participation and excitement. Instead of individual families, "Mentorship Points" were distributed to the four larger teams, which could be earned by attending events and in other ways, further described below. Last year, members were discouraged when their families were not as involved in mentorship and they got behind on points. The team system leveled the playing field, as 4 larger teams were more likely to be closer in points than a team of 3, where one members' lack of participation can affect the whole team. The prize for the winning team at the end of each semester was a gift card to a restaurant that allowed the whole team to spend time together.



Example of a family using their gift card from the competition to enjoy a meal together.

Families could earn points in multiple ways

- 1. Large-Group BMES Mentorship Events: These were structured online mentorship events hosted by the chapter. If the whole family attended as a group, extra points were awarded to them. This year, in order to increase collaboration between families and include all members of the chapter, inter-family groups were formed and changed for each collaboration-style event.
- 2. **Family Meet-Ups:** Small gatherings were organized through individual families. Zoom meetings were common, while some families met up for walks and other socially-distant activities. They ranged from group visits to coffee shops to exploring downtown Columbus together. A minimum of 4 family meetups per semester per team were encouraged, allowing families to bond more closely.
- 3. **BMES Social Events:** Points were awarded for members to attend the chapter's social events. This encouraged bringing our members together not only in their own teams, but also to make the organization feel like an inclusive community.
- 4. **BMES Outreach Activities:** Participation and volunteering in the chapter's outreach events allowed mentorship participants the ability to earn points.
- 5. **Professional Development Events:** Attendance at these events was encouraged and rewarded with points, to show what career-related opportunities the organization could provide. Mentors also assisted at these events by providing advice to underclassmen at events such as "Resume Review."
- 6. **General Body Meetings:** Attendance at these events was rewarded with points.
- 7. **Bingo Sheet Completion:** Monthly "bingo sheets" were released at the beginning of each month. Each square held a challenge, task, or event to be completed as a family. Completing three-in-a-row items would reward the family points.

An example of one of our bingo sheets. Completing 3-in-a-row by the end of the month (vertical, horizontal, diagonal) would be a "bingo": photos from each hangout needed to be shown to an officer to earn points. If there was an event that higher participation was wanted, it would be in line with two other easy-to-complete activities.



The Events

The events that the program put on were intended to build a sense of community within the OSU chapter of BMES. The specific events were chosen with intention to be engaging, fun, and establish a sense of team-building, and took into account feedback from surveys sent to members of the program. In combination with the other above methods, our large-group mentorship events brought energy to the program that helped improve the quality of participation and relationships of the families from previous years, and are described on the next page.

Fall Mentorship Week - Speed Dating

Mentorship was kicked off with a week full of events for underclassmen and upperclassmen to get to know one another. The first event consisted of speed dating between the mentors and the mentees so they could talk about what they were involved in, interested in, and potentially find a mentorship match.



Date/Location	Audience	Attendance	Cost
9/7/21, 5:30pm Fontana 2040	General Body	48 attendees	\$20

Fall Mentorship Week - Outdoor Game Day

Held on the second day of mentorship week, this event was a way for mentors and mentees to get to know each other better in a casual setting. Members were randomly split into teams and played a variety of outdoor games, including balloon pop, relay race, and water balloon toss. The day ended in a water balloon fight between all members that got everyone laughing.



Date/Location	Audience	Attendance	Cost
9/8/21, 6:00pm Outside	General Body	21 attendees	\$50

Fall Mentorship Week - Mentor Reveal Party

The final day of mentorship week was a party where the members of each mentorship pairing/teams was revealed. After the excitement of finding out their match and team, members played games like Codenames and Mario Kart while getting to know their team members better.



Date/Location	Audience	Attendance	Cost
9/10/21, 6:00pm Fontana 2040	Mentors and Mentees	51 attendees	\$80

Scavenger Hunt

BMES mentors and mentees gathered to compete in a campus-wide scavenger hunt. Teams were given clues that led to specific places on campus, and competed in their teams to get to those places first. The first team to take pictures at all of the places on the list and get back to the meeting room won mentorship points towards the competition.



Date/Location	Audience	Attendance	Cost
10/11/21, 6:00pm Fontana 2040	General Body	33 attendees	\$38



Jeopardy!

Mentees and mentors met in their teams to compete in Jeopardy! Categories included BME specific questions along with more casual and fun questions. The winning team received mentorship points towards the competition.

Date/Location	Audience	Attendance	Cost
11/2/20, 6:00pm Fontana 2040	General Body	26 attendees	N/A

BMES Got Talent

Members of mentorship were encouraged to sign up for the talent show individually or in groups with members of their team. People competed with many different talents, including comedy, juggling, dancing, singing and many more. The winners of the talent show won mentorship points and gift cards.

Date/Location	Audience	Attendance	Cost
11/18/21, 6:00 pm Fontana 2040	General Body	11 attended	\$60

Mental Health Workshop

In order to learn how to cope with the stress of finals and being a college student in general, BMES hosted an event with one of the engineering counselors, Dr. Stefanie Day, on how to cope with stress and take care of your mental health. She provided some relaxation and breathing techniques, along with providing helpful daily habits and giving the students access to more resources if they felt like they needed extra help.



Date/Location	Audience	Attendance	Cost
12/2/21, 6:00 pm Fontana 2040	General Body	17 attended	\$52

Online Game Tournament - Spring Kickoff

BMES mentors and mentees gathered virtually in the beginning of the semester to play online games. The attendees voted to play "Quiplash" online, and enjoyed the game so much they played it until the end of the event. "Quiplash" is a comedy game which helps you get to know the people you're playing with on a casual and friendly level.

Date/Location	Audience	Attendance	Cost
1/13/22, 6:00 pm Zoom	General Body	15 attended	N/A

Mario Kart Tournament

Members gathered to compete in a Mario Kart Tournament on a Nintendo Switch, with the games projected on the projectors in the lecture room. With two games going on, people had a chance to play, watch, chat, and cheer for their teammates. The winning member earned mentorship points for their team.

Date/Location	Audience	Attendance	Cost
2/10/22, 6:00 pm Fontana 2020	General Body	21 attended	N/A

BMES Olympics/Mentorship Finale

BMES mentors and mentees gathered for the last time before the student to participate in the BMES Olympics. Four events were completed during this session. First of all was a Rock-Paper-Scissors event, where members from each respective 'color teams' played amongst each other. The next event was a Multiplication Times Table, where each attendee had to solve multiplication problems in one minute. Next was a Tug of War event between all four teams. Lastly, was an Egg Relay Race. The teams that won each event received points towards the total mentorship standings.



Date/Location	Audience	Attendance	Cost
4/12/22, 6:00 pm Fontana Laboratories	Interested mentors and mentees	29 attended	\$80

III-E. Industry and Professional Development Activities

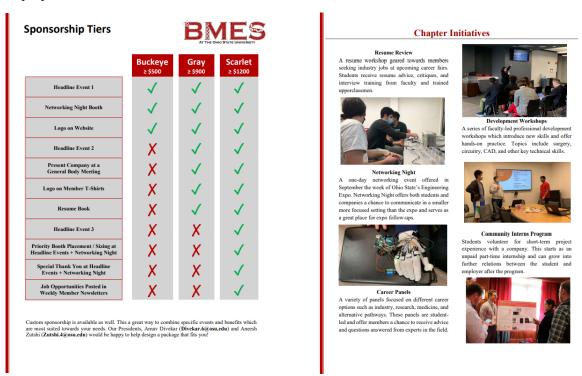
This year, BMES saw tremendous growth with professional development (PD) through the initiation of the corporate sponsorship program. Our chapter was able to achieve the highest company collaboration rate in history, leading to several recruitment and development opportunities for our members. We also started a new Networking Speaker series and Professional Development Workshop Series which helped our members gain instrumental skills to help them in their future paths. The PD Workshop series focused on constructing ECG tools and robotic surgery while the Networking Speaker series focused on several facets with faculty speakers and clinical engineering speakers at the Wexner Medical Center. We were also able to host several of our conventional events including Community Interns, Resume Review, Networking Night, etc. which provided numerous opportunities for students to improve application materials for jobs/internships. In addition to events, we also focused on utilizing experience from alumni and current chapter members by creating a Networking database on our website. This feature allows underclassmen to look at the work and research experience of alumni or upperclassmen so they can conveniently reach out to network with them. This database, combined with the PD events, has allowed members in our chapter to grow professional skills and land positions in the companies/industries they desired.

Corporate Sponsorship Program

Before we speak about individual professional development events in our chapter, we would like to discuss the sponsorship program which allowed our chapter to collaborate with various companies. The corporate sponsorship program was initiated this year as an attempt to develop year-long collaboration with medical device companies. This allowed recruiters from companies to attend several events throughout the academic year and develop a pipeline of talented graduates and interns from our chapter. Our members also enjoyed this fruitful collaboration

since they were exposed to several recruiting sessions for internships and also were able to ask important questions regarding application processes and tips from the company.

Planning for the sponsorship program began during the summer before the year, which consisted of developing a sponsorship packet. This packet describes the various perks and events that companies would receive for collaborating with our chapter and also has descriptions for various sponsorship levels. The current sponsorship packet is viewable on our website and a preview is also displayed below.



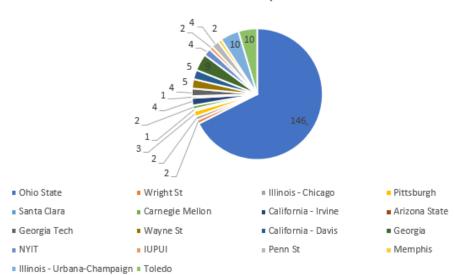
Preview of sponsorship packet with tiers/benefits (left) and description of events (right) - full link found on website

We included several benefits within the tiers in order to draw attention from companies in industry, These sponsorships allowed for entry into our headline events (EHIRS, Bio-Hack, and Sculpting Your Future) as well as additional benefits such as a resume book, logo on member T-shirts and website, and ability to present and recruit at a general body meeting. We utilized several sources to reach out to as many companies as possible and created a database to document our results. These sources included reaching out to previous companies that have attended EHIRS in previous years, having summer interns reach out to their employers, working with professional organizations such as BioOhio and JobsOhio, and reaching out to alumni on LinkedIn. After reaching out to 40+ companies, we ended up hosting events with 12 different companies including Johnson & Johnson, Battelle, Epic Systems, and many other medical device industry leaders. These companies attended events such as EHIRS, Bio-Hack, Sculpting Your Future, Resume Review, General Body Meetings, and some even hosted their own company-specific recruiting events. Next year, a new Corporate Relations Liaison officer position will exist to contact numerous companies and continuously update the sponsorship packet based on company feedback.

Engineering in Healthcare: Industry and Research Symposium

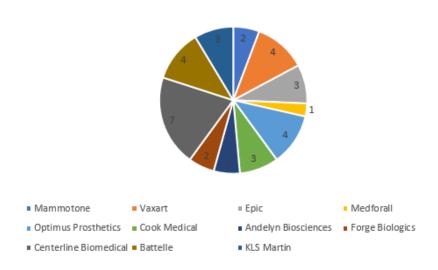
Date/Location	Audience	Attendance	Cost
02/18/22 - 02/19/22 10:45am - 5:00pm (18th) 11:00am - 4:15 pm (19th) Virtual	All BMES members	146 OSU Students; 310 Total Attendees	\$5,381.69

EHIRS University Attendees



Breakdown of EHIRS University Attendees

EHIRS Industry Attendees



Breakdown of EHIRS Industry Attendees by Company

The seventh annual EHIRS was a collaboration between The Ohio State University and 17 other national university BMES chapters. It was held completely virtually via an online event platform called Hubilo. The conference was open to the public and featured multiple industry booths run by company representatives, two industry panels with speakers from industry, four concurrent sessions of graduate student research presentations, two keynote speakers, two networking sessions, a poster session for student presenters, and finally, an awards ceremony. The industry booths were set up by industry representatives and were hosted on the 'Rooms' feature on Hubilo, allowing students to interact directly with the companies' representatives via Hubilo. Faculty members from The Ohio State University and Mount Vernon Nazarene University judged the research presentations, and provided insights to students as to how to improve. On the first night of EHIRS, a social event for students was held by the OSU BMES Graduate Student Association via GatherTown to allow for a more personal "meet and greet" among students from all chapters.

Looking at feedback for the event, most attendees highly enjoyed the switch to a new, two day format, as well as the overall event, highlighting the industry panel and student research presentations as their favorite. As the event expands there are many improvements to be made for next year. BMES plans to return EHIRS to an in-person event, with hybrid features, so that attendees can attend in-person, as well as allow those who are unable to travel to Columbus to attend virtually. We also wish to invite more industry representatives for an inclusive and well-rounded networking session, as well as other universities, so that we are able to foster relationships made during past EHIRS. Due to the expansion of the event, we plan on keeping the two-day conference format in order to facilitate more productive and interactive sessions.



EHIRS Committee

Sculpting Your Future

Date/Location	Audience	Attendance	Cost	Industry Involvement
03/26/22 10:00 am-3:00pm (Virtual)	All BMES members	24 attendees	\$500	Joanne Melindez Misner (NASA) Dr. Courtney Collins (OSU Wexner Medical Center) Dr. LaTonia Stiner-Jones (OSU Faculty) Dr. Katelyn Swindle-Reilly (OSU Faculty) Sarah Wilson (EPIC) Dr. Gonul Kaletunc (OSU Faculty)

The Sculpting Your Future featured women from diverse backgrounds in industry, healthcare, and academia were brought in to empower women and inform male allies of positive methods of empowerment. The virtual event began with the keynote presentation from Joan Melindez Misner, a mission integration systems engineer at NASA. She is a first generation college student and shared her inspirational pursuit of working at NASA along with the microaggressions she experienced along



the way and tips to overcome them. Workshops 1 and 2 followed the keynote speaker. Dr. Courtney Collins presented on diversity in the workplace for Workshop 1 and shared her experiences as a clinician at OSU Wexner medical center and a member of the LGBTQ+community. Christine Hang led the next workshop on entrepreneurship. Christine developed Flow MedTech along with cardioR.E.S.T., focusing on medical devices to minimize the risk of strokes in patients with irregular heart rhythms. A networking lunch followed the first two workshops. Sarah Wilson, a technical services division lead and coordinator from EPIC attended the lunch along with Christine Hang and Dr. Courtney Collins. Two breakout rooms titled industry and medical school were created and attendees were placed accordingly based on their interests. Throughout the lunch, the attendees were prompted to reflect on questions regarding their experiences with diversity and ways to empower others.



Workshops 3 and 4 followed the networking lunch. Dr. LaTonia Stiner-Jones presented on salary negotiations for the third workshop. Dr. Stiner-Jones is the Associate Dean of graduate

programs and an associate professor of practice in biomedical engineering. Her interactive workshop provided attendees with tools to know your worth and how to self advocate. The final workshop was led by Dr. Katelyn Swindle-Rielly titled Don't Sell Yourself short. This workshop covered the prevalence of imposter syndrome and practices to feel empowered and appreciate your accomplishments.

The event concluded with a speaker panel featuring Dr. Gonul Kaletunc, a professor of food engineering at Ohio State and founded the Aspiration for Women's Advancement and Retention in Engineering Sciences (AWARES) program. The panel was an opportunity for attendees to receive final takeaways from the speakers. We hope to improve in the future by increasing the number of allies in the audience by including a male speaker.

OSU Stem Day

Date/Location	Audience	Attendance	Cost	Speakers
01/22/22 1:00 pm-4:00pm, (Virtual)	Local Middle and High School Students	22 attendees	\$140	Dr. Rachel Childers (OSU Faculty) Cory Matyas (OSU Faculty)

The Biomedical Engineering Society (BMES) hosted a virtual OSU Stem Day to help high school and middle school students engage in the engineering design process and explore The Ohio State University's College of Engineering. The event was hosted in collaboration with OSU's Chapters of Society of Women Engineers (SWE) and Association of Computing Machinery Women's Chapter (ACMW). Attendees were given a virtual tour of Fontana Laboratories, the new biomedical/materials science engineering building, along with an ultrasound imaging demonstration by Dr. Childers. All attendees were also given supplies beforehand to engage in a scratch coding session and a medical cast design activity. There was a panel at the end that consisted of students from BMES, SWE, ACMW, and BME advisor Cory Matyas. The panelists offered unique perspectives as they all had various motivations and experiences for coming to the OSU College of Engineering. The goal of the panel was to help students get their questions answered about Ohio State and the College of Engineering.

Resume Review

The Resume Reviews were intentionally scheduled to take place right before the Autumn and Spring Career Fairs. This provides our members with the opportunity to have multiple volunteers look over their resume and offer constructive feedback. This event is partially targeted towards freshmen who may have only recently created a formal, college resume. With an effort to increase industry collaboration, our spring event involved two industry representatives from Mammotome to help review student resumes. Feedback from our members indicated that they enjoyed this event and were grateful to the officers who assisted them with their resume. Mammotome feedback was also positive in both the structure of the event and of the attending undergraduates. Our members were therefore able to attend the career fairs feeling well-prepared.

Date/Location	Audience	Attendance	Cost	Industry Involvement
9/21/2021 Fontana Labs 2040	All BMES members	45 attendees	N/A	N/A
01/27/2022 (Virtual)	All BMES members	22 attendees	N/A	Garrett Householder (Mammotome) Shan Blake (Mammotome)

Networking Night

The purpose of Networking Night was to provide both BMES members and all students at The Ohio State University who were interested in bioscience an opportunity to connect with Biomedical Engineering industry professionals. This served to help attendees grow their professional networks while learning about innovative biomedical engineering projects and potential career paths. Networking Night has traditionally been an opportunity for BMES members only, and has been held the night before Ohio State's Engineering Expo to permit members personal interaction with bioscience representatives prior to the commotion of the Expo. Due to COVID-19 restrictions, Networking Night was hosted on Zoom. Though the turnout was high enough to fill the allotted time, it was far less than when held in-person prior to the pandemic.

Date/Location	Audience	Attendance	Cost	Industry Involvement
09/29/2021, 5:00pm Virtual	All BMES members	28 attendees	N/A	Remy Niman (MIM Software) Ali Rahimi (Medforall) Courtney Sveda (Steris) Dr. Richard Eldridge (OSU Wexner)

Networking Speaker Series

The purpose of the Networking Speaker Series was to provide attendees with the opportunity to connect with academic researchers and industry professionals within the field of biomedical engineering. These events allowed attendees to foster new professional networks while learning about innovative biomedical



engineering projects and potential career paths. During the Networking Speaker Series events, the invited speaker would present a summary of their current job position, how they got interested in this field of work, and any advice they had for students interested in pursuing a similar career path. Afterwards, the attendees were encouraged to ask general or specific questions to the speaker. For the first Networking Speaker Series event, snacks and beverages such as chips, cookies, and water were provided by the Center for Medical Engineering and Innovation. We purchased Jimmy John's sandwiches and water for attendees to enjoy during the second Networking Speaker Series event. Feedback from attendees was quite positive as students enjoyed learning about various BME career paths and research projects that they had never been exposed to before.

Networking Speaker Series

featuring Dr. David Eckmann



WHEN: MONDAY OCTOBER 18 6-7PM WHERE: FONTANA LAB (BMEC) 1000

Dr. David Eckmann is a physician Anesthesiologist and a Ph.D. Biomedical Engineer. He is also the director of OSU's Center for Medical and Engineering Innovation (CMEI). Join us to learn more about his academic and professional careers through his presentation titled "A Physician-Scientists" Journey into Medicine and Engineering: Practice, Research and Education."





Networking Speaker Series

featuring Richard Eldridge



WHEN: MONDAY NOVEMBER 15TH 6-7PM WHERE: FONTANA LAB (BMEC) 1000 RSVP FORM: GO.OSU.EDU/NSS_RSVP

Richard Eldridge is the Director of Clinical Engineering at the Wexner Medical Center. Join us to learn about his professional journey from a Biomedical Technician to the Director of Clinical Engineering Services. His presentation will include achievements and struggles he faced while getting his Bachelor's Degree in BME, along with factors to consider when prusing industry coreer paths.





Networking Speaker Series

featuring Dr. Andre Palmer



WHEN: TUESDAY MARCH 29 6-7PM ZOOM LINK: GO.OSU.EDU/NSS_EVENT

Dr. Andre Palmer is the Associate Dean for Research in the College of Engineering and a Professor of Chemical and Biomolecular Engineering, Join us to learn about his academic and professional journeys at Howarc University, The John Hopkins University, and The Ohio State University, His presentation will also include his current research investigations of finding blood substitutes and engineering biomaterials for use in transfusion medicine and tissue engineering.



Date/Location	Audience	Attendance	Cost	Industry Involvement
10/18/2021 (In Person)	All BMES members	10 attendees	N/A	Dr. David Eckmann (OSU Faculty)
11/15/2021 (In Person)	All BMES members	17 attendees	\$64.99	Richard Eldridge (OSU Medical Center)
03/29/2022 (Virtual)	All BMES members	19 attendees	N/A	Dr. Andre Palmer (OSU Faculty)

Research Panels

This event is meant to connect Principle Investigators (PIs) in need of undergraduate/graduate students with undergraduate/graduate students seeking a research lab together. A panel of OSU professors presented their research alongside the various opportunities available in their labs. After the presentations, the presenters were separated throughout the room where the attendees

had the opportunity to network depending on their interest. At this point, if the interactions are positive, the professor and the individual/s continue the conversation at a later time and the individual is added to the research team if suitable. In prior years, this event occurred twice in the academic calendar, once in Autumn, once in Spring. However, a new initiative termed "Research Recruitment Events" (noted later in the document) was explored to help create a more intimate setting for students to pursue research opportunities. Resuming the in-person platform, we had a strong turnout in attendance and positive experience.

Date/Location	Audience	Attendance	Cost	Research Speakers
11/01/2021 Fontana Labs 2040	All BMES members	42 Undergraduate	\$41.46	Dr. Benjamin Walter (OSU Faculty) Dr. Thomas Hund (OSU Faculty) Dr. Samir Ghadiali (OSU Faculty) Dr. Narasimham Parinandi (OSU Faculty) Dr. John Bolte (OSU Faculty) Dr. Gunjan Agarwal (OSU Faculty)

Professional Development Circuitry Workshop

In this workshop, students built and tested an EKG circuit, making use of a breadboard, arduino, circuitry components, leads and electrodes. Students then read and visualized their own EKG signals making use of an oscilloscope. Additionally, the student data was filtered and analyzed using a MATLAB code to help obtain an accurate signal that may approximately reflect what a clinically used EKG device might display. Dr. Ortiz-Rosario guided attendees through this whole process so each student could experience the taking, filtering, and analyzing of an EKG.



Date/Location	Audience	Attendance	Cost	Faculty Involvement
11/16/2021 Fontana Labs	All BMES members	16 Undergraduate	N/A	Dr. Alexis Ortiz-Rosario

Professional Development Robotic Surgery Workshop

The robotic surgery workshop was a way for students to experience and experiment with a real world clinical application of biomedical engineering in the form of the Intuitive Da Vinci surgical system robot. In this workshop, students were first intended to listen to a virtual lecture given by Dr. Desmond D'Souza, who regularly makes use of robotic surgery techniques. Over 30 undergraduate attendees logged in for the lecture, however, the surgeon was called into a surgery and the lecture was canceled. During the in person phase of the workshop, students were able to control and operate the practice simulators that surgeons may use to simulate using the Da Vinci surgical system in the operating room environment. Three sessions were offered for the in-person event, with 9 slots available for each day. Each slot was filled by our chapter members. This event was possible through collaboration with Ohio State's Advanced Center for Robotic Surgery and representatives from Intuitive Surgical to walk students through the use of the surgical robot. Feedback from attendees regarding the event was very positive as everyone appreciated the opportunity to experience the robotic surgery system.





Date/Location	Audience	Attendance	Cost	Industry Involvement
4/4/2022 Wiseman Hall	All BMES members	9 attendees	N/A	Ohio State's Advanced Center for Robotic
4/5/2022 Wiseman Hall	All BMES members	9 attendees	N/A	Surgery Intuitive Surgical
4/7/2022 Wiseman Hall	All BMES members	9 attendees	N/A	

Thermo Fisher Panel

The Thermo Fisher Panel event was an opportunity for students to hear from a panel of representatives from the biotechnology company, Thermofisher. This event was held virtually on zoom, and attendees were able to submit questions to the panelists before the event and during the event. This event was especially helpful for students considering a career in industry as they were able to get first hand advice from people who have gone down a career path in the biomedical engineering industry.

Date/Location	Audience	Attendance	Cost	Industry Involvement
11/30/2021 (Virtual)	All BMES members	25 attendees	N/A	Alexandria Sams Matt Dallas Brittany Balhouse Colin Paul

Community Interns

The purpose of the Community Interns events was to give students a direct opportunity to work companies on a volunteer basis. This allowed students to gain more hands-on experience in the **STEM** field, especially for underclassmen without previous internship experience. BMES hosted Community Interns **Events** with representatives from Medforall in the Autumn and KLS Martin in the Spring. At the fall event, the representatives explained the project then networked with students 1:1 in speed-networking sessions.



At the spring event, our chapter hosted a 2-day hiring event in collaboration with KLS Martin. The first day served as an information session on the company and the structure of work that would be performed by interns over the summer months. The second day KLS selected 9 applicants for in-person interview sessions. Travis Simpson from KLS Martin described the highlights of his positive experience with our chapter to be the "Student engagement/interest, turnout, event planning, smoothness of visit."

Date/Location	Audience	Attendance	Cost	Industry Involvement
10/12/2021 Fontana Labs Room 1000	All BMES members	12 attendees	\$42.25	Ali Rahimi (Medforall)
3/22/2022 - 3/23/2022 Fontana Labs	All BMES members	30 attendees	\$7	Travis Simpson Grant Wilson Andrew Stricklin (KLS Martin)

Grad School 101

This year, the Biomedical Engineering Society (BMES) hosted a virtual graduate school panel to help undergraduate students learn more about graduate school, get their questions answered, and build their overall confidence regarding graduate school. The panelists offered unique perspectives as they all had various motivations and experiences for applying to graduate schools. Panelists included current graduate students and postdocs from Ohio State University, Stanford, Duke, UC Davis, and UT Dallas.

Date/Location	Audience	Attendance	Cost
09/16/2021, 6:00pm Virtual	All BMES members	27 attendees	N/A

Medical School 101

This year, the Biomedical Engineering Society (BMES) hosted a virtual medical school panel to help undergraduate students learn more about medical school, get their questions answered, and build their overall confidence regarding graduate school. The panelists offered unique perspectives as they all had various motivations and experiences for applying to medical schools. Panelists included medical students from Ohio State University, Drexel University, and University of Pittsburgh.

Date/Location	Audience	Attendance	Cost
10/26/2021, 6:00pm Virtual	All BMES members	28 attendees	N/A

Research Recruitment Events

Similar to the Research Panels, the Research Recruitment Events were meant to connect Principle Investigators (PIs) with undergraduate students to initiate the recruitment process. Interested students filled out an interest form by specifying their availability and providing an updated resume. We received 13 and 26 interested applicants for the Radwanski and Gallego-Perez labs respectively. We invited these selected students to an in-person networking event where they could visit the lab



space, observe research equipment, and ask questions about the specific projects that graduate students were conducting. The in-person event was pivotal to ensure both the undergraduate student and PI had a chance to meet each other and outline expectations. Through the Research Recruitment Events, we helped 4 undergraduate students begin working in the Radwanski Lab and 6 undergraduate students begin working in the Gallego-Perez Lab.

Date/Location	Audience	Online Responses	In-Person Attendance	Cost	Recruiting Lab
02/08/2022 (In Person)	All BMES members	13 Students	6 attendees	N/A	Dr. Przemyslaw Radwanski
03/10/2022 (In Person)	All BMES members	26 Students	15 attendees	N/A	Dr. Daniel Gallego-Perez

November General Body Meeting

This meeting started out by informing members on upcoming events for the chapter. We subsequently had several representatives from Biosense Webster (Johnson & Johnson) present about their company and BME roles that they are searching for, especially the Associate Clinical Account Specialist (ACAS) position for their 3D mapping system during radiofrequency cardiac ablations. They described the benefits of working for Johnson & Johnson as well as described the training structure for new employees in the ACAS role. The presentation was then followed by a Q/A session with food and beverages so that



students and speakers could speak in smaller settings.

Date/Location	Audience	Attendance	Cost	Industry Involvement
11/04/21	All BMES members	47	\$240	Kaila Recker Anthony Salmeron Josef McQuain Andrew Blake

March General Body Meeting

This meeting started out by informing members on upcoming events for the chapter. Following this initial presentation by chapter leaders, a representative from Epic Systems delivered a recruiting presentation for roles that hire biomedical engineers into the company. described the various roles and career progressions that are available within the company, along with displaying the social life and relationships developed within the company. This presentation was followed up by a Q/A session where asked about her personal students experience and the application processes.



Date/Location	Audience	Attendance	Cost	Industry Involvement
03/08/22	All BMES members	40	\$135	Sarah Wilson (Epic Systems)

Industry Panel

Industry Panels aim to introduce undergraduate BME students to the diverse career paths that can be taken in different industries with a Biomedical Engineering Degree. The panel provided an opportunity to ask questions relating to finding a job after graduation, or what additional classes would be beneficial to take when thinking of a specific career path. Majority of panelists were OSU graduates, with a goal of showing undergraduates how different opportunities can be found under the same education. BMES hosts moderated the Q&A so that panelists were asked a combination of previously-sent questions and new ones from the Zoom chat. Attendees found the panelists' advice insightful and believed that the event was beneficial.

Date/Location	Audience	Attendance	Cost	Industry Involvement
02/28/2022 (Virtual)	All BMES members	20 attendees	N/A	Tony Mango (Orlando Health) Marissa Kamenir (Ethicon) Steve Mozelewski (Phillips) Traci Romano (Harry J. Lawall & Son Inc.) Joe Bradley (Hawk Medical LLC)

Student Networking Database

The intention behind this effort was to foster a growing community within our student members and in the long term, have contacts available for future industry partnerships. Over 60 students filled out a form providing their academic background, career paths, and professional experiences to share with the Ohio State Biomedical Engineering community. This information is available to our members to reach out for advice on specific work experiences, long term career goals, and general mentorship. The current database in development is featured on our website at https://www.osubmes.org/initiatives/professional-development.

III-F. Societal Impact Activities

Our BMES chapter provided the BioHack event to help students gain hands-on experience for developing medical device solutions to impact the surrounding community. These opportunities came in the form of expanded events and new initiatives, offering our members multiple chances to get involved. BioHack has been a rapidly growing event and featured both company and faculty-sponsored projects for the first time this year. We specifically partnered with a Columbus start-up company, Medforall, to target the surrounding community and help improve lives for those with disabilities. Additionally, we incorporated senior capstone projects into a showcase event this year, allowing freshmen to see what they can accomplish as BMEs.

BioHack

This year, BioHack was a weekend-long, in-person, socially distanced event where the goal was to enable students to work on a healthcare solution. This event was open to all students and featured a variety of projects, industry networking, and various prizes. Two weeks before the day of the main event, students were able to form teams based on challenges they were interested in tackling. BMES worked with industry partner Medforall to create BioHack's first ever company sponsored challenges. Medforall provided resources and materials to student teams interested in their two challenges. The OSU BMES chapter partnered with campus organizations like the Electronics Club and the Innovation Studio at OSU to help students with technical challenges and provide 3D printing capabilities, respectively. The Medforall CEO, Mr. Ali Rahimi, and OSU BME faculty judged student team presentations at the conclusion of the hackathon based on how well the challenges were addressed and the caliber of the completed projects. Prizes and recognition were given out to the best teams. The rationale behind having a company sponsor is to foster a connection between students and industry so that they can not only add meaningful experiences to their resumes, but also have the opportunity to network with local medical device startups. The great thing about BioHack this year is that students, especially underclassmen, were able to become more acquainted with BME faculty through participating in the faculty sponsored challenge and sharing their ideas during the judging portion.

Date/Location	Audience	Attendance	Cost
10/22/2021-10/24/2021, In-Person	All BMES students	44 attendees	\$2060



Opening Ceremony



Innovation Studio 3D Printing



Student Team Hacking



Device Presentation

BMES Capstone Event

BME seniors had a chance to show off their hard work by presenting their prototypes to underclassmen. This gave the seniors a chance to practice their presenting skills before their final capstone presentation, and showed the underclassmen what they would be able to achieve in just a few short years with a BME degree.



Date/Location	Audience	Attendance	Cost
3/3/22, 6:00 pm Fontana 2020	General Body	17 attended	N/A

IV. National BMES Meeting

The Ohio State BMES chapter will continue to bring a strong member body at the national meeting. We aim to bring at least 50% of the executive board as well as any other members that want to attend. This year, the Ohio State chapter was recognized with the Outstanding Mentorship Program award at the Student Chapter Breakfast. Chapter Co-President Arnav Divekar accepted the award and gave a speech thanking National BMES as well as offering advice about how to grow and sustain an impactful mentorship program. Later at the conference, Aneesh Zutshi, Chapter Co-President, helped lead the Chapter Leader Q&A, advising other student chapter leaders on best practices to help grow a BMES chapter and the opportunities it offers. Outside of leading sessions, Ohio State chapter members were engaged throughout the national conference. They participated in poster sessions to further their understanding of particular research areas and connected with other student chapters, such as University of California Irvine and University of Illinois Urbana Champaign, to learn about their operations and also plan future collaborations. Lastly, Ohio State chapter members made an effort to attend special sessions such as the minority and gender equity luncheons to contribute to important dialogue and take away practices that could be used to improve the Ohio State chapter and biomedical engineering department as a whole. Overall, the national conference was an excellent opportunity that the attending officers took full advantage of to develop their personal career goals, improve Ohio State chapter operations, and increase inter-chapter collaborations.

Goals for Future Annual Meetings

- 1. Increase chapter attendance by allocating more university and personal funds towards travel costs for the conference. This year, we brought 8 people and hope to increase it to 10 for future years.
- 2. Network with more collegiate BMES chapters in the Midwest area to recruit for our annual EHIRS event. We were able to speak with University of Illinois Urbana-Champaign this past year to organize the inter-chapter Battle of the Brains event but would like to meet even more chapters to increase inter-chapter collaboration.
- 3. We aim to have more of our members present their research during poster sessions and oral presentations. Last year, we had several graduate students present but lacked undergraduate student presenters.





IV-A. Attendance

Undergraduate Students in Attendance

First Name	Last Name	Email (Lastname.#@Osu.edu)	
Aneesh	Zutshi Zutshi.4@osu.edu		
Arnav	Divekar Divekar.6@osu.edu		
Kate	Mallek	Mallek.6@osu.edu	
Ellie	Guilfoyle Guilfoyle.16@osu.edu		
Shivangi	Mohta	Mohta.9@osu.edu	
Maariyah	Ahmed	Ahmed.710@osu.edu	
Mihir	Joshi Joshi.373@osu.edu		
Hannah	Mullany Mullany.5@osu.edu		

IV-B. Participation

Student/Chapter workshops and lectures attended by members

- 10/07/21 Student Awards Breakfast
- 10/07/21 Poster Session A
- 10/07/21 Plenary Session: State of the Society
- 10/07/21 Special Events: Celebration of Minorities in BME Luncheon
- 10/07/21h Q&A with Chapter Leaders, Make Your Chapter Thrive
- 10/07/21 Concurrent Platform Sessions
- 10/07/21 Poster Session B
- 10/07/21 Plenary Session: Diversity Award Lecture

- 10/07/21 Industry Mixer
- 10/08/21 Grad School Panel
- 10/08/21 Poster session C
- 10/08/21 Special Events: Gender equity in BME Luncheon
- 10/08/21 Platform Sessions
- 10/08/21 Academia Salon
- 10/08/21 Poster Session D
- 10/08/21 Special Events: BMES Bash
- 10/09/21 Creating a Startup I
- 10/09/21 Concurrent Platform Session

V. Future Directions

V-A. 2022-2023 Officer Contact Information

Title	Name	Email	Responsibilities
Co-President	Arnav Divekar	Divekar.6@osu.edu	Oversee officers
Co-President	Aneesh Zutshi	Zutshi.4@osu.edu	Oversee officers
Internal VP	Stephen Piatkowski	Piatkowski.4@osu.edu	Organize mentorship program
External VP	Shivangi Mohta	Mohta.9@osu.edu	Oversee events involving companies
Secretary	Sam Harmeyer	Harmeyer.23@osu.edu	Create weekly newsletter
Treasurer	Grant Schrieber	Schrieber.2@osu.edu	Record operating budget
Marketing Chair	Louie Melaragno	Melaragno.50@osu.edu	Run social media accounts
Social Chair	Austin Carlin	Carlin.105@osu.edu	Host socials and intramurals
PD Chair*	Celine Ertin	Ertin.3@osu.edu	Organize PD events
Projects Chair	Mihir Joshi	Joshi.373@osu.edu	Plan Bio-Hack
EHIRS Co-Chair **	Rachel Horvath	Horvath.269@osu.edu	Run EHIRS 2022
EHIRS Co-Chair **	Abhishek Shah	Shah.1478@osu.edu	Run EHIRS 2022
SYF Co-Chair***	Kate Mallek	Mallek.6@osu.edu	Plan SYF event
SYF Co-Chair***	Hannah Mullany	Mullany.5@osu.edu	Plan SYF event
Outreach Co-Chair	Ethan Hessick	Hessick.4@osu.edu	Organize community events
Outreach Co-Chair	Jinju Kim	Kim.8301@osu.edu	Organize community events
E-Council Rep.	Neil Thakkar	Thakkar.123@osu.edu	Attend OSU E-Council meetings
E-Council Rep.	Ervin Cui	Cui.676@osu.edu	Attend OSU E-Council meetings
Corporate Liaison	Maariyah Ahmed	Ahmed.710@osu.edu	Recruit company sponsors
Faculty Liaison	Anna Wang	Wang.12213@osu.edu	Attend OSU faculty meetings
Diversity/Inclusion Rep.	Cecilia Groves	Groves.219@osu.edu	Host diversity/inclusion events
Freshman Rep.	N/A	N/A	Receive new member feedback

^{*} Professional Development, **Engineering in Healthcare: Industry & Research Symposium, ***Sculpting Your Future

V-B. Looking Ahead

Our BMES chapter has made notable improvements and accomplishments this year; however, we strive to continue our growth into next year in all areas of our society. Despite the difficulties surrounding the COVID-19 pandemic, we achieved our goal from last year by recording the highest attendance and retention rates in the history of our chapter. We would like to continue building this supportive and friendly environment by utilizing the perks in our chapter's Slack software messaging platform. Slack offers the ability to create several "channels" or group chats within a group to organize different group chats for members. We hope to create smaller channels to help members get to know other students of similar interests. We will have a "casual" channel for impromptu and informal hangouts, "Pre-med" or "Industry" for students to ask questions about their desired career path, and also channels for mentorship teams/families. These channels will help increase interaction between members to become more involved in BMES. In addition to these administrative changes, we plan to improve our diversity/inclusion within our chapter, develop our new corporate sponsorship program, implement mentorship for medical and graduate school paths, and increase outreach collaborations in the Columbus community.

The overall goals of our upcoming diversity and inclusion efforts include increasing education and awareness of diversity while facilitating inclusive practices. A new diversity/inclusion officer position has been created to solely focus on expanding these efforts. Some of these initiatives include creating infographics with additional resources about various history, heritage, and awareness months, integrating land acknowledgements into meetings and events, and improving efforts to use gender inclusive language. They will also be recruiting diverse representatives for our various speaker panels throughout the year. While the OSU BME Department and BMES chapter are both diverse communities, we plan on initiating more discussions and events solely focused on diversity and inclusion. This collaboration with the department will occur by involvement of the diversity chair in the Diversity Affairs Committee (DAC) where they will speak with faculty members and graduate students in the BME department to develop department-wide initiatives. Additionally, we will actively work to improve engagement from our female members by targeting more events to that audience.

Another key focus for our chapter in the upcoming year is to expand our corporate sponsorship program with a new corporate-liaison officer position to help facilitate this path. By reaching out to companies earlier in the summer semester months, we can attract more companies before budget plans have already been allocated for the new fiscal year. Through development of our student networking database in this past year, we now have direct connections to several industry partners through our own university's graduated members. In the past, different officers would connect with industry partners when needed for events. For the upcoming year, having one officer in point of contact will help deepen this relationship and improve communication between our two groups. Developing a feedback system will both help make our sponsor's voice heard to improve our events, and provide testimonies on the professionalism of our organization to help attract more sponsors. Through these initiatives, we hope to increase our company collaborations by 50%. By achieving this goal, more opportunities and connections will arise in the professional development of our members, to help prepare them for the biomedical engineering industry.

In regards to other career paths, we wish to expand our mentorship program by creating a graduate school mentorship program. This will be done in collaboration with Ohio State's Biomedical Engineering Graduate Student Association (GSA), where interested graduate student 'mentors' will be paired up with several interested undergraduate student 'mentees'. This pairing will be based upon research field interest, so that both the mentors and mentees will have a similar interest. This program will be more professional based, compared to our traditional mentorship program. There will be monthly meetings so that the mentors and mentees are able to meet each other at consistent intervals throughout the year. Through this program, we hope members will learn about everyday life as a graduate student, receive help with graduate school applications, as well as networking opportunities for current graduate research lab positions.

We also plan to coordinate a medical school mentorship program for those members interested in becoming a future physician. We will partner with a student organization at the Ohio State University College of Medicine to recruit current medical students interested in mentoring prospective students with a strong interest in medicine so that our students are able to obtain the assistance they need from BMES not just on the industry or academia side, but also for professional post-graduate studies. These events will focus on improving personal statements, completing pre-medical requirements, and obtaining opportunistic experiences in the field. We will also invite medical students with a Bachelors in Biomedical Engineering from other colleges such as Johns Hopkins University and Case Western Reserve University to give our students a unique perspective on medical admissions from those who were admitted or obtained their undergraduate degree from another institution. Through these experiences, we hope to provide our members with the tools to use their unique background in biomedical engineering to provide a new outlook on clinical medicine as future physician-engineers.

In addition to developing our members, we want to continue inspiring the next generation of young engineers by serving the Columbus community. We will be focusing on maintaining consistent communication with relationships developed this past year including Dublin Coffman High School, Columbus Metro, and Dublin Jerome, while also developing relationships with new contacts such as Upper Arlington and Hillliard district schools in Columbus. Furthermore, we will expand upon our collaboration this past year with the Society of Women Engineers (SWE) to develop more outreach opportunities for aspiring females in the STEM field similar to OSU STEM day from this year. We will also be continuing the clinical and outside volunteer opportunities by updating these opportunities and contacts on the BMES website.

There are several tasks that we have planned to take outreach, mentorship, and professional development to the next level. We are confident that we can accomplish these goals for next year to continuously improve our chapter and build memorable experiences for our members.

