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2019-2020

# BIOMEDICAL ENGINEERING SOCIETY at UCLA

## Chapter Development Report

Since its inception in 2003, the Biomedical Engineering Society (BMES) chapter at the University of California, Los Angeles (UCLA) has strived to bring together undergraduate students, graduate students, faculty members, alumni, and industry professionals for the improvement of the bioengineering community on campus. Our organization's central mission focuses on ensuring the success of any student interested in the field, both inside and outside of the classroom. To do so, UCLA BMES focuses its activities and events to target six crucial aspects of a student's career: academic success, professional development, social interactions, mentorship, community outreach, and technical skills training. This year, our team has introduced extensive improvements to all of these branches. Among these achievements, we debuted the sole Bioengineering Career Week at UCLA, introduced a site-based community outreach STEM program at a Title I school, and offered mental health workshops for student wellness. The following chapter development report elaborates further on the progress BMES UCLA has proudly accomplished this academic year.

# A LETTER

To the Student Chapter Award Committee Members,

In the 2019 - 2020 year, the UCLA chapter of the Biomedical Engineering Society made significant developments in the areas of industry and professional development, community outreach, and technical projects.

In October of 2019, we debuted our first Bioengineering Career Week as part of an effort to provide students the tools necessary to meaningfully connect with recruiters, create more awareness about the breadth of career paths available to bioengineering majors, and bring more bioengineering-centric job and internship opportunities to campus. This event marks the beginning of a tradition of representing bioengineering on a wider scale to the entirety of UCLA.

We have also expanded the reach and capacity of our community outreach efforts. This academic year saw the pilot of our new initiative: Reaching and Inspiring Students in Engineering (RISE). Through the RISE program, our chapter established a year-long collaboration with a Title I middle school to mentor students on basic engineering concepts, including circuitry and Arduino.

Lastly, we have significantly grown our technical projects division into five year-long project teams that accommodate 62 students across multiple majors. These project teams provide students hands-on experience and the opportunity to develop valuable technical skills. This year also saw the inception of the technical projects workshop series, held to teach students skills such as public speaking in STEM, soldering and more, thus preparing students for future endeavors.

As our membership increases, so too has our capacity to hold exciting, one-of-a-kind programs for students. This was a year of many firsts, and has set a new benchmark from which BMES can continue to grow and improve. These opportunities, while substantially more diverse and accessible than previous years, will undergo many changes in the coming years to better serve a larger number of attendees and students of all fields of study, not just bioengineers. We are excited to see how this academic year will serve as the seed of a new future for BMES.

Sincerely,

*Izabella Samuel*

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## FROM OUR ADVISOR

## IN THIS REPORT

BMES UCLA is proud to present the 2019-2020 Chapter Development Report.

In this document, we have reported all administrative and financial information regarding our events of the year, along with a detailed review of our chapter's activities. It is important to note that, at the time of this report due to the COVID-19 outbreak, the UCLA academic school year has not yet ended, and BMES UCLA has pivoted to a virtual presence where possible as of 3/25/2020 amid the campus closure.

# CONTENTS

<b>ADMINISTRATIVE REPORT</b>	<b>4</b>
<b>TREASURY REPORT</b>	<b>7</b>
<b>CHAPTER ACTIVITIES</b>	<b>10</b>
* SOCIAL	11
* INTER-CHAPTER	16
* OUTREACH	17
* MENTORING	20
* INDUSTRY & PROFESSIONAL DEVELOPMENT	22
* TECHNICAL PROJECTS	26
* NATIONAL BMES MEETING	31
<b>FUTURE DIRECTIONS</b>	<b>32</b>

# ADMINISTRATIVE REPORT

The UCLA BMES chapter is classified by the Henry Samueli School of Engineering School of Engineering and Applied Sciences as a medium-sized organization. As such, the BMES board consists of 29 officers who design and execute all BMES events. Led by the President, the three Vice Presidents manage their respective branches and corresponding officers, ranging from external affairs, to internal event planning, to technical projects (specific positions further detailed on the next page). The officers identified in this report do not include the 10 committee members who assist the officers in their duties.

The wider general membership of the BMES chapter is open to all students, regardless of major or year. Membership grants students access to all events planned by our officers, ranging from academic to social to industry opportunities. This year, we are proud to announce that our membership has increased from 135 members to 199 members, representing over 50% of the undergraduate student body in the Department of Bioengineering and over five other majors. BMES constantly aims to increase this participation.

# BMES BOARD

## ADMINISTRATIVE OVERVIEW

### CHAPTER PRESIDENT

Izabella Samuel  
*izabellasamuel@gmail.com*  
 Oversees chapter operations

### INTERNAL VICE PRESIDENT

Natalie Maxwell  
*natmaxcollege@gmail.com*  
 Oversees internal operations, mentorship, and social events

### SECRETARY

Amelia Lao

### ACADEMIC CHAIR

Mimi Carson

### MENTORSHIP COORDINATOR

Thamira Skandakumar

### MENTORSHIP CHAIRS

Cole Benyshek  
 Linnet Chang  
 Kayla Choi  
 Griffith Hughes

### EXTERNAL VICE PRESIDENT

Nicole Kuntjoro  
*n.m.kuntjoro@gmail.com*  
 Oversees external events, finances, and acts as industry liaison

### TREASURER

Dimei Wu

### PUBLICITY CHAIRS

Neha Iyer  
 Christine Pamplona

### INDUSTRY CHAIRS

Angela Lu  
 Joseph Picchi

### COMMUNITY OUTREACH CHAIRS

Rakhi Banerjee  
 Mayilone Sathialingam

### TECHNICAL VICE PRESIDENT

Smiti Narayanan  
*smitin9@gmail.com*  
 Oversees technical projects teams and coordinates supplies

### BUILD TEAM: PROJECT MANAGERS

Sumedha Kanthamneni  
 Philip Lue  
 Aditya Sivakumar  
 Talia Wolf Jacobs

### CELL TEAM: PROJECT MANAGERS

Kajal Maran  
 Alison Tran

### DESIGN TEAM: PROJECT MANAGERS

Shikha Mody  
 Simon Ng  
 Saahil Patel

## GENERAL BOARD MEETINGS:

The BMES board meets weekly (discounting holidays and finals week) to collaborate on the direction of the organization. It also allows for the executive board to check-in with each position and provide support.

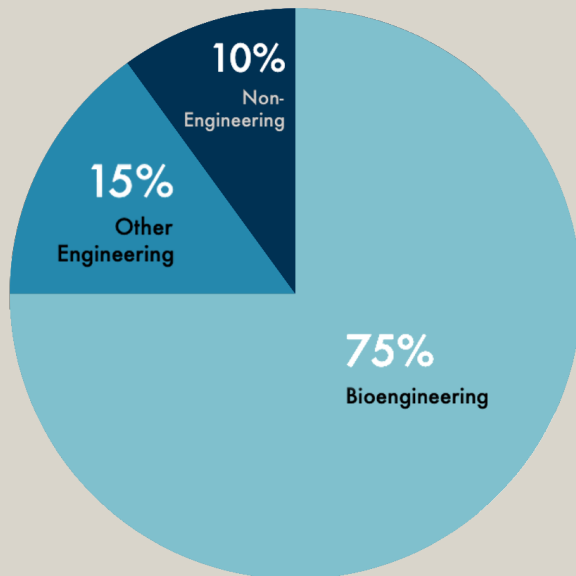
The **agenda** for each meeting is the same: a review of the previous week's events (if applicable), announcements of upcoming plans or events from every position within board, and a feedback roundtable for chairs to discuss points of improvement.

Board Meeting Dates *virtual		
Fall	Winter	Spring*
10/8/19	1/13/20	4/6/20
10/15/19	1/27/20	4/15/20
10/29/19	2/3/20	4/22/20
11/5/19	2/10/20	4/29/20
11/12/19	2/24/20	5/6/20
11/19/19	3/2/20	5/13/20
11/26/19		5/20/20
		5/27/20

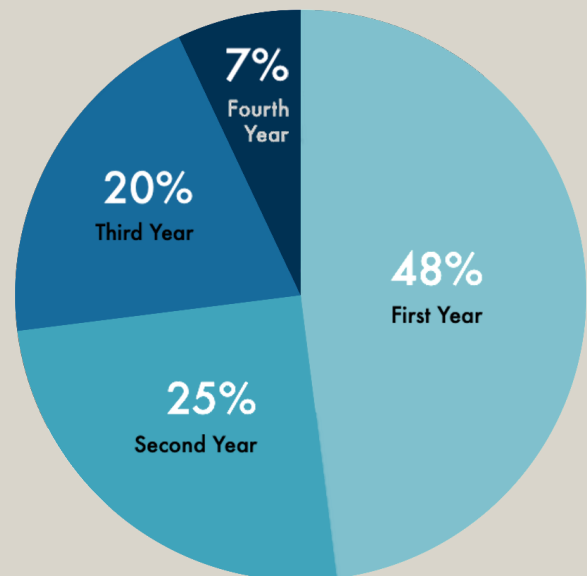
# MEMBERSHIP

## GENERAL STATISTICS

### BMES Membership by Major



### BMES Membership by Year



BMES UCLA consists of 199 registered members. 150 of these members are bioengineers, **representing 51% of the Department of Bioengineering** undergraduate students.

This membership also represents multiple majors, including chemical engineering, electrical engineering, mechanical engineering, computer science, materials science engineering, civil engineering, biochemistry, computational systems biology, molecular biology, neuroscience, and applied mathematics.

**Ten of these members are national BMES members** and **7 of the 15 core faculty** of the Bioengineering Department have participated in chapter activities over the 2019-2020 academic year.



#### FALL GENERAL MEETING

OCT. 1, 2019

Attendance: 145

Agenda: Introduce 2019-2020 Board; Announce committee and technical projects applications; Introduce Fall events



#### WINTER GENERAL MEETING

JAN. 8, 2020

Attendance: 94

Agenda: Introduce Winter events, Announce technical project applications, Publicize industry and outreach projects



#### SPRING GENERAL MEETING

APR. 1, 2020

Attendance: N/A (pre-recorded video)

Agenda: Introduce 2020-2021 BMES Executive Board; Address virtual presence; Announce Spring online events

# TREASURY REPORT

BMES UCLA proudly hosts all events free-of-charge for its members, and relies on the accumulation of fundraiser revenue and available funding from UCLA for all expenses. The External Vice President and the Finance team are responsible for the coordination of BMES accounts to ensure coverage for necessary line items for each event. The Finance Team coordinates quarterly fundraisers to generate funds used only for the purchase of BMES-related items. Additionally, for larger scale events, the Finance Team also completes applications and receives support from various UCLA student funding sources on campus, further enabling us to host our events without an entry fee.

The following report encompasses all expenditures and revenue accrued throughout the year from 9/23/2019 to 3/25/2020 as no further balance changes are anticipated due to campus closure. This report shows that BMES UCLA has spent over \$15,000 in event planning, including assets granted by funding sources and from existing accounts. No officers are monetarily compensated for their work, and all funds are spent on BMES activities.

# EXPENSES

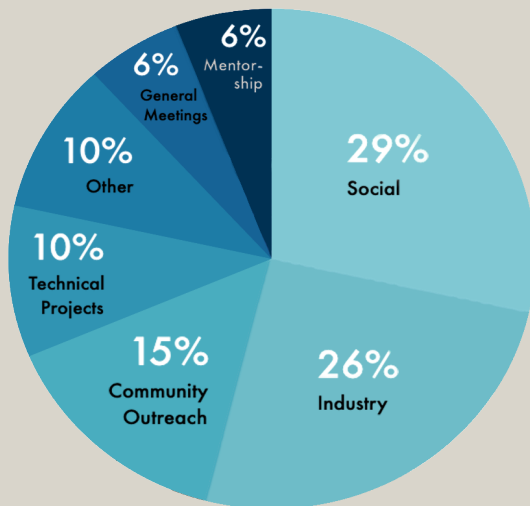
## ACCOUNTS BREAKDOWN

### Overview of expenditures and deposits by event category

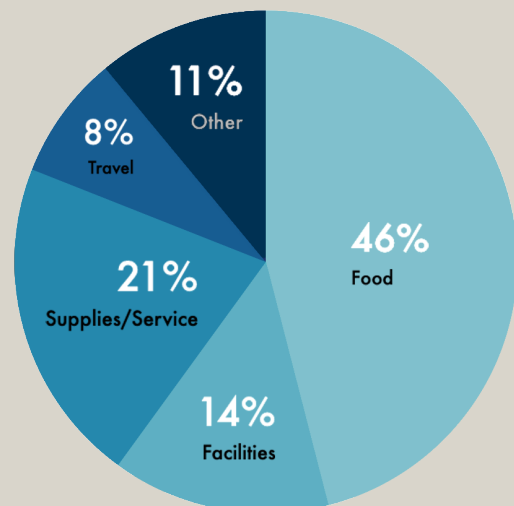
Event Type	Expenditure	Deposit
Community Outreach	\$2,540.54	\$2,540.54
Fundraisers	\$0.00	\$3,122.43
Industry	\$4,311.68	\$2,735.68
General Meeting	\$655.00	\$0.00
Mentorship	\$547.08	\$433.85
Mentorship Family	\$459.16	\$0.00
Social	\$4,925.54	\$4,590.54
Technical Projects	\$1,684.49	\$772.07
Other (BMES T-shirts)	\$1,749.97	\$500.00
<b>Total</b>	<b>-\$16,873.96</b>	<b>\$14,694.84</b>
<b>Net Account Change</b>	<b>-\$2,179.12</b>	

Note: Due to campus closures, BMES's Spring Quarter fundraisers were cancelled. The remaining balances were settled using accrued funds throughout BMES history.

### Expenditures by Event Category



### Expenditures by Type





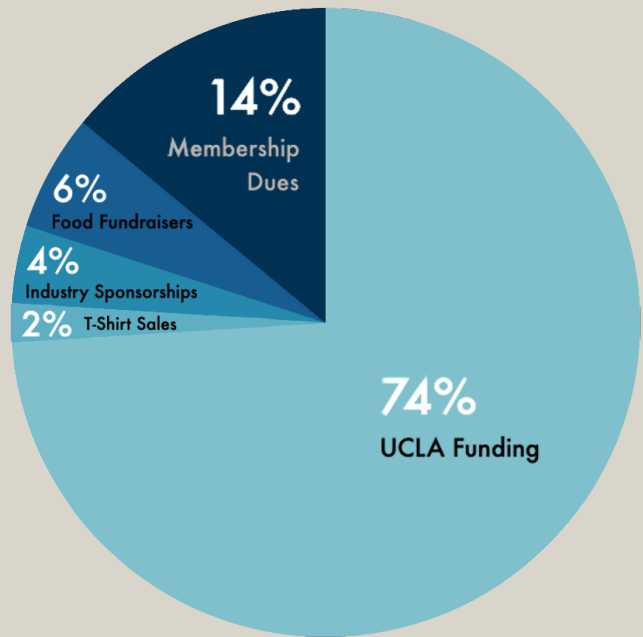
# FUNDING

## OVERVIEW

### Overview of BMES Fundraisers:

Name	Date	Amount
Membership Dues	ongoing	\$1,990.00
T-shirt Sales	ongoing	\$228.00
Sip Matcha Tea Shop	11/19/19	\$62.73
Krispy Kreme Sale	2/13/20	\$287.00
Boba & Banh Mi Sale	3/4/20	\$555.00
<b>Total</b>		<b>\$3,122.43</b>

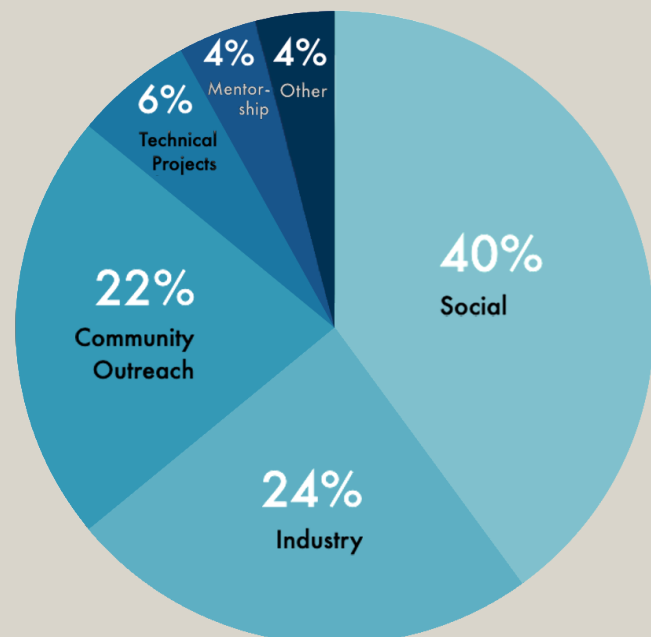
### Financial Support



### Overview of External Funding:

Name	Amount
[UCLA] Campus Support for Student Programming	\$2,622.69
[UCLA] Community Activities Commission	\$2,540.54
[UCLA] Contingency Finance Application	\$2,818.48
[UCLA] Bioengineering Dept.	\$502.07
[UCLA] Equity, Diversity, and Inclusion Fund	\$500.00
Industry Sponsorship - Abbot	\$100.00
Industry Sponsorship - UCLA Johnson Comprehensive Care	\$500.00
[UCLA] Recreation Event Fund	\$1,109.50
[UCLA] Student Organization Operation Fund	\$500.00
[UCLA] Student Union Events Fund	\$379.13
<b>Total</b>	<b>\$11,572.41</b>

### External Funding Spent by Event Type



# CHAPTER ACTIVITIES

BMES UCLA offers a wide variety of events to help its members succeed both inside and outside of the classroom. To do so, BMES is organized into six primary divisions that highlight different aspects of a student's college career: social networking, technical projects, community outreach, professional development, academics, and mentorship. Social events help connect BMES members to life-long friends, while community outreach programs connect our members to the local community. Our professional development events both prepare our members and connect them with recruiters. The Technical Projects teams build on this by providing hands-on experiences for students to build projects and hone their skills. Lastly, our academic and mentorship teams boost the confidence of students by highlighting mental health and creating a network of resources.

All of these events offered throughout the year possess the ultimate goal of helping our members grow as both engineers and as individuals. As we constantly evolve, BMES UCLA hopes to continue to improve both its national BMES involvement and cross-campus collaborations.

# SOCIAL ACTIVITIES

We aim to host many diverse social events every quarter to encourage bonding and networking between our members and within the bioengineering department. Our larger events allow students to interact with graduate students and faculty on a more casual level, and our smaller events through our Family system allow students to bond in a fun and friendly setting.

## Department-Wide Celebrations

Once a quarter, BMES hosts a large gathering with undergraduates, graduate students, faculty members, and department staff to **gather and celebrate the bioengineering community**. Whether it be a game-filled barbecue to kick off the new year, or quarterly dinner events to celebrate the accomplishments of the quarter, these nights help connect the undergraduate membership to the rest of the department in a casual, friendly setting.



	Date	Cost	Attendance
Fall Barbecue	10/3/19	\$519.11	75 (5 graduate, 2 faculty)
To kick off the academic year, the BMES Fall Barbecue brings together any student or faculty member interested in BMES. Old and new members alike get to know each other with carnival games and some freshly grilled food.			
Holiday Party	11/25/19	\$1,509.86	90 (10 graduate, 4 faculty)
BMES members come together to celebrate a successful Fall quarter and the holidays. This year's theme was Who-liday Party, based on "How the Grinch Stole Christmas." Faculty and students played games and enjoyed a semi-formal dinner.			
Bioengineer's Ball	2/28/20	\$1,252.71	75 (1 faculty)
At the end of Winter Quarter, BMES hosts the Bioengineer's Ball for members to dance away their midterms stress and have fun before the onset of finals season. With a live DJ and hors d'oeuvres served, everyone was welcome.			
Spring Banquet (virtual)	5/22/20	---	49
To reflect on another successful year, Spring Banquet allows all of BMES to gather and bid farewell to graduating seniors and enjoy a final gathering together.			

## Undergraduate Socials

Several events throughout the quarter are targeted to the undergraduate population for students **to have fun and build friendships** with their fellow bioengineers. These events may be athletic competitions or themed events!



	Date	Cost	Attendance
Fall Board Retreat	10/5/19-10/6/19	\$790.82	19
	The BMES Board goes to a remote location in Big Bear, California for a weekend before the academic year begins in full force for team-building events and bonding that ultimately creates a stronger team to host the year's events.		
Korean Barbecue Trip	10/25/19	\$30.00	30
	An annual tradition for BMES, members take a trip to Koreatown in Los Angeles to get to know each other over the sizzling grill of all-you-can-eat Korean Barbecue.		
BMES Thanksgiving	11/15/19	\$50.00	20
	In the spirit of community and Thanksgiving, members of the BMES family enjoy a fun night of games and food at this potluck style event. This event helps students that do not return home to celebrate the holidays with their Bruin family.		
House Cup Games	12/17/19	\$131.10	33
	The four BMES Mentorship Families (discussed further on the next page) gather to compete in a series of athletic teamwork games to prove which Mentorship Family has the best skills on the field.		
Winter Board Retreat	1/11/20-1/12/20	\$853.04	22
	BMES Board, now joined by the new committee members selected to train under their respective chairs, get to know the new committees and spend the weekend in Santa Barbara playing team work games and reflecting on the quarter ahead.		



Sports Day

2/8/20

\$39.98

31

All BMES members were invited to join BMES on the intramural fields to play a variety of sports such as volleyball and soccer and meet new teammates.

The Great BMES Bake-Off

3/7/20

\$120.00

25

The Mentorship Family competition of the quarter, each family was tasked with preparing two chocolate and strawberry themed baked goods the night before the Bake-Off. Guest judges from the department and all attendees got to taste the delectable creations!

## Mentorship Families

We understand that big events can be daunting. The Mentorship Family system aims **to make social gatherings more accessible** for students. Students that sign up to join a family are **paired with an upperclassman volunteer mentor** and then placed into a **family based on both career and recreational interests**. Our families, named after the DNA nucleotides, are a great source of friends, mentors, and memories! These families form tight relationships and even compete in larger Mentorship events. BMES subsidizes some costs, although students pay for some events. (All events are open to all students, regardless of family.)

(Note: Cancelled events and more in depth descriptions have been omitted for conciseness and length purposes.)



### Cytosine Family

Family Head: Cole Benyshek

Focus: LA life, industry mentorship

	Date	Cost	Attendance
Leo's Tacos Night Run	10/22/19	\$15.00	8
Halloween Pumpkin Carving	10/30/19	\$97.00	10
Sawtelle Karaoke and Dessert Night (with Thymine)	11/22/19	\$50.00	17
Family Dinner on the Hill (Dorm Dinner)	1/9/19	---	12
Dim Sum Trip	2/29/19	\$25.00	9
Baking Night	3/6/20	---	9



## Thymine Family

Family Head: Linnet Chang

Focus: Events nearby campus, class mentorship

	Date	Cost	Attendance
Taco Tuesday at Linnet's	10/15/19	---	22
Bob Ross Painting Night (with Adenine Family)	11/5/19	\$48.12	30
Sawtelle Karaoke and Dessert Night (with Cytosine Family)	11/22/19	\$50.00	17
Family Dinner on the Hill (Dorm Dinner)	1/6/19	---	10
Face Masks and Movie Night	1/24/20	\$15.00	6
Board Game Night (with Guanine Family)	2/7/20	\$40.00	16
Baking Night	3/6/20	---	9



## Adenine Family

Family Head: Kayla Choi

Focus: Arts and outdoors, class mentorship

	Date	Cost	Attendance
Hollywood Hike (with Guanine Family)	10/21/19	---	9
Bob Ross Painting night (with Adenine Family)	11/5/19	\$48.12	30
Dining Hall Study Session	11/13/19	\$12.67	6
Family Dinner on the Hill (Dorm Dinner)	11/12/20	---	10
Board Games and Tacos Night	2/10/20	\$36.37	10
Baking Night	3/6/20	---	4



## Guanine Family

Family Head: Griffith Hughes

Focus: Living in the dorms, pre-med mentorship

	Date	Cost	Attendance
Ice Cream and Ice Blocking	10/18/19	---	12
Hollywood Hike (with Guanine Family)	10/21/19	---	9
Baking and Movie Night	11/23/19	\$55.00	8
Ice Skating	12/2/19	---	5
Taco Tuesday	1/21/20	\$65.00	22
Board Games Night (with Thymine Family)	2/10/20	\$36.37	10
Baking Night	3/6/20	---	6

## Virtual Spring Quarter Events

In light of the recent effects of the COVID-19 pandemic, which has resulted in campus closure and the transition of UCLA to an online education format, BMES has pivoted to maintaining a virtual presence with its members. We have strengthened our resolve to remain connected to our members and to provide the social and emotional support to help students that feel disconnected from their college experience.

Our efforts have largely relied on the strong bond between members of our mentorship family. Our family heads throughout Spring Quarter do not host specific events, but rather **provide availabilities for constant contact**. Some examples of how BMES has kept social contact with its family are:

- Holding Zoom virtual sessions every Friday from 6pm-8pm for students to chat, play games, study, or reach out for support
- Invite students to weekly trivia night, hosted by various online presences



# INTER-CHAPTER ACTIVITIES

Although our traditional inter-chapter activity with USC was cancelled due to COVID-19 campus closures, BMES UCLA has used the unprecedented times to pivot to developing a virtual relationship with neighboring BMES chapters. We collaborate with other chapters by attending each other's events, and hold meetings with chapter leaders to plan for future collaborations.

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*List of collaborative events with other university BMES chapters*

	Date	Collaborating Chapter	Cost	Attendance
Engineering Skills to Industry	4/15/20	University of California, Irvine	---	15
		BMES at UCI hosted a talk by Dr. Chris Hoo, a professor of Materials Science & Engineering at UCI with immense industry experience. He currently works at Avon Protection, a company that is producing COVID-19 PPE, and Cerdyne, a 3M company.		
Covid-19 & Public Health Talk	5/5/20	University of California, Irvine	---	27
		BMES at UCI hosted Dr. Albert Chang, the Medical Director of the UCI Student Health Center to talk about efforts to combat the COVID-19 pandemic and careers involving a public health in an open Q&A format.		
Beach Volleyball Social (cancelled)	Spring	University of Southern California	---	---
		Every year, USC and UCLA BMES chapters reignite a friendly challenge to see which chapter is superior in a tournament of Beach Volleyball at the Santa Monica beach.		

## Inter-Chapter Relations

Due to the campus closures caused by current events, BMES UCLA has reached out to various UC BMES chapters and have **ignited the beginning of new relationships** for the future. We hope to continue to build from these virtual interactions.

## Future Inter-Chapter Goals

- Continue to host virtual workshops with our fellow student chapters
- Build camaraderie between student chapters by arranging in-person socials and collaborations for Community Outreach or Technical Projects purposes
- Plan a UC-wide symposium for all BMES chapters in California to gather and celebrate our accomplishments together
- Share tactics and systems for success among all BMES chapters
- Create a UC-wide alumni mentorship system to increase the number of resources available to all students



# OUTREACH PROGRAMS

We believe that BMES should give back to the surrounding Los Angeles youth community - we focus on bridging the education gap to ensure that all young students have the opportunity to actively engage with science and learn about engineering in a fun environment. We always strive to increase the reach and quality of our efforts. For example, we launched our Reaching and Inspiring Students in Engineering (RISE) program to bring our curriculum to a middle school campus. Similarly, our Science Day events create a hands-on learning environment on the UCLA campus for children. Lastly, we host fundraisers to help our community.

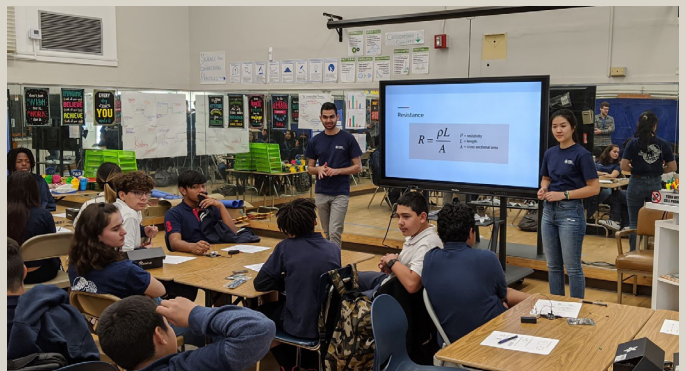
## Reaching and Inspiring Students in Engineering (RISE)

Our goal is to implement a **year long, hands-on educational experience to foster continued interest in pursuing higher education and a career in the field of engineering.** RISE partners with James Madison Middle School, a Title I school where over 90% of students come from low-income backgrounds, and provides students from an underserved community with the opportunity to explore the vast possibilities in science without financial limitations. RISE offers a structured, engaging learning environment in which these students are not only introduced to STEM concepts, but are also exposed to the various opportunities available to them as they continue their education.

Our program focuses on **teaching basic engineering concepts** through hands-on learning in which students have the opportunity to learn to build basic circuits with the guidance of our volunteers. Students learned to build LED circuits, construct series and parallel circuits, and use pushbutton switches. The culminating project was to build a circuit controlled by a joystick to light up a row of LEDs; however, due to the COVID-19 pandemic, these modules were not completed. We have received positive feedback from the school science director, teachers, and principal, and it was extremely rewarding to increase students' interest in STEM through these visits.

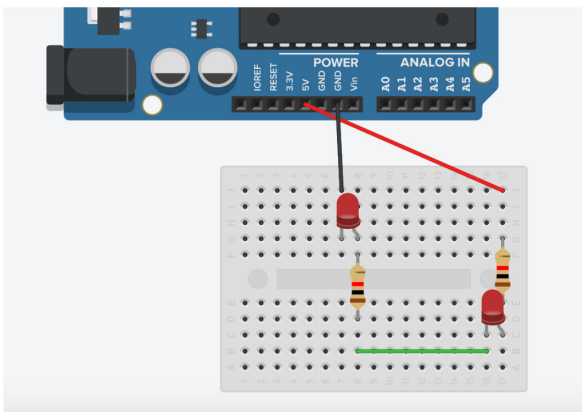
### RISE Annual Budget

Item/Expense	Cost
Technical Equipment (Arduino kits, breadboards, multimeters, etc.)	\$1,508.47
Travel	\$665.00
Clerical Supplies	\$137.86
Food	\$229.21
Total	\$2,540.54



	Date	Attendance	Curriculum
RISE Visit #1	11/21/19	41 (8 volunteers)	Circuit Basics: Voltage, current resistance, open vs closed circuit; Drawing schematic diagrams; Using breadboards and Arduino to light up an LED
RISE Visit #2	2/13/20	42 (10 volunteers)	Series and Parallel Circuits: Drawing and building parallel and series circuits with multiple LEDs and resistance; Coming up with circuits to build on their own
RISE Visit #3	3/6/20	42 (9 volunteers)	Intensity (difference in intensity between series and parallel circuits); Drawing and building circuits involving pushbutton switches
RISE Visit #4 (cancelled)	4/17/20	---	Introduce Arduino Software IDE and ability to program Arduinos; Provide templates for various programs for LEDs and switches for students to adjust.
RISE Visit #5 (cancelled)	5/8/20	---	Arduino electrocardiogram demonstration; Introduce joystick components to students, explain the final project; Wiring joystick to breadboard, begin project
RISE Visit #6 (cancelled)	5/29/20	---	Continue final project-connect LEDs and joystick and upload software program; Informal presentations at the end of class

## Try Making a Series Circuit with 2 Resistors and 2 LEDs



*Curriculum from previous RISE modules*



## Holiday Food Drive (11/20/19 - 1/17/20)

Throughout the holidays, BMES collected non-perishable food supplies and donations from UCLA students to be donated to the Westside Food Bank to **support low-income individuals in West Los Angeles**, particularly students lacking food security.

We partnered with the Mentorship Team and other school organizations to coordinate a campus wide fundraising effort.

Together, **we raised over \$325 and donated over 200 food items** from BMES members and the engineering community.



## Science Day Series (cancelled)

Beginning with Equitas Science Academy in 2016, UCLA BMES has hosted the Science Day Series every year. We bring middle school students from Title I schools in the surrounding Los Angeles area to UCLA for an fun-filled day of science! We have since expanded to multiple schools, including Madison Middle School.

Classes of about 80-90 eighth grade students travel to UCLA for a day, where they are greeted by BMES volunteers. They go on a **campus tour** hosted by UCLA Admissions tour guides, explore the **planetarium with a guided show** about the stars, listen to **graduate school panelists** talk about their experiences of falling in love with science, and conduct **their own science experiment** by extracting strawberry DNA. The majority of these students come from a minority background, so our diverse panelists and student volunteers provide a great representation of minorities pursuing STEM.

(Note: The Science Day Series was scheduled to expand to two events during the Spring Quarter, both of which were cancelled due to campus closure.)



	Date	Cost	Attendance
Kid's Day with ESUC (cancelled)	4/7/20	---	---
Madison Science Day (cancelled)	5/22/20	---	---

# MENTORSHIP

One of the primary goals of BMES is to ensure that every student who is looking for help can find it in BMES. The Academic Chair and Mentorship Family Heads thus host different events that provide resources to all students, whether it be academic advice, career tips, or where to find the best food on campus. This year, we especially focused on creating a safe space for students struggling with mental health to find support by hosting open talks and workshops. We also debuted the Alumni Mentorship Network, in which UCLA alumni are paired with undergraduates interested in similar career paths for advice. This program partners with our own Mentorship Family system, as students are able to ask upper classmen and alumni for answers to all of their career and life questions.

## Mental Health Workshops

	Date	Cost	Attendance
Imposter Syndrome Workshop	1/23/20	\$150.00	15
Imposter Syndrome is the feeling of not belonging in your place, and it is a condition that has affected many engineering students as the stresses of academic and social life begin to take their toll. This event was a relaxed, open-forum talk where those who have suffered from it can share their experiences and feel heard. Those comfortable also speak to their methods and processes of working past it.			
Stress & Spring Quarter Workshop	4/13/20	---	13
We understand that the transition to online education has been difficult for everyone. This workshop addressed the toll on mental health the COVID-19 epidemic has taken, and Mentorship Chairs presented on helpful study tips and lifestyle habits to adjust to a new environment and stay focused.			



**Stress & Spring Quarter**  
Monday, April 13th  
7 PM PST  
Zoom link below



## Alumni Mentors

Tiana Baghdikian	Eumene Lee
Nitika Chellappa	David Li
Eva Chen	Jonathan Massachi
Michael Cheng	Tommy Nguyen
Phillip Cox	Eric Pan
Shreya Ghai	Ryan Stoutamore
Farhana Haque	Jennifer Wang
Michael Hashimoto	Chloe Wu
Mandy Hung	Hilary Yen
Derek Hung	Meagan Yuen
Carolyn Kim	Max Zhu

## Alumni Mentorship Network

This year, we have debuted the **Alumni Mentorship Network!** Undergraduates interested in hearing the perspectives of alumni who have graduated from the bioengineering program can subscribe to the program, where they are paired with an Alumni Mentor based on future career interests. Alumni come from a large variety of backgrounds, ranging from research and development roles in industry, program management, medical school, law school, or graduate school for a Master's degree or PhD.

Students are connected to their mentors and are free to reach out at their own pace, as many alumni are located around the world. All of our mentor-mentee pairings have an initial phone or video call, and can **shape the mentorship experience into whatever they like!** Many of these alumni also return to participate on our Alumni Panel.

## Academic Guidance

	Date	Cost	Attendance
First Year Welcome	10/1/19	\$26.00	50
	To help freshman and transfers feel comfortable during their first days on campus, BMES hosts a first-year specific event to help students meet fellow classmates and ask the mentorship chairs of BMES any questions.		
Class Planning Workshop (Fall, Winter, Spring Quarter)	11/5/19, 2/6/20, 5/21/20	\$15.00, \$15.00, none	33, 18, 16
	Students with questions of what classes to take for the upcoming quarter or want help building a 4-year class plan can come and find help with experienced upper classmen. Snacks are also provided! The workshop is hosted as an open office hour format, where students can ask mentors for one-on-one counseling sessions.		
Graduate & Medical School Panel (virtual)	5/4/20	---	42
	A panel of seniors, alumni, and professors answer questions regarding the application process for graduate and medical school. This panel covers information regarding obtaining an MS to PhD to MD, and offers advice for how the bioengineering degree has helped them.		
Alumni Panel (virtual)	5/11/20	---	35
	Alumni in careers in industry and academia answer questions about their careers and post-undergraduate life. They also share advice about how to best succeed at UCLA and what they've learned after graduating.		

# INDUSTRY & PROFESSIONAL DEVELOPMENT

BMES aims to both prepare students for a career in industry and create opportunities for them to connect with professionals for internships or full-time opportunities. To do so, we have premiered the first and only Bioengineering Career Week on campus, and offer a variety of events such as site visits and info sessions with company and graduate school counselors to present students with a holistic overview of different industry career pathways and enable them to find opportunities for a future job.

## Bioengineering Career Week

As part of our goal to **increase the number of professional opportunities available for our members**, BMES debuted the first Bioengineering Career Week this past fall. As the only career event specifically oriented towards students interested in industry pathways in bioengineering or biotechnology, we help expose students to professionals in a wide variety of occupations to help them understand the different options available to them.

To prepare students for Career Week, we hosted **a resume and elevator pitch workshop** to train students in professional etiquette. A **Careers in Bioengineering Panel** offered perspectives from professionals in different industries ranging from medical school to patent law to research and development. The panel was followed by **Bioengineering Networking Night**, during which students could connect with the panelists and industry mentors over a business casual dinner setting. The week closed with the second annual **Biotechnology Career Fair**, in which ten bioengineering companies attended to recruit BMES Bruins for full-time and internship positions.



	Date	Cost	Attendance
Resume/Elevator Pitch Workshop	10/7/19	\$63.53	26
Careers in Bioengineering Panel	10/10/19	\$220.00	109
Bioengineering Networking Night	10/10/19	\$921.17	63
Biotechnology Career Fair	10/11/19	\$1,065.35	225

List of Bioengineering Career Week professional guests

Panelist/Guest	Company/Field
Nadine Afari	Management, CTIP
Akeisha Anderson	Admissions, UCLA Law
Marlene Berro	Director, UCLA FDA Affairs
Calvin Brown	PhD Research, GRFP Fellow
Marcus Goudie	Research, UCLA Biodesign
Peter Hsiue	Medicine, UCLA Orthopedics
Sabing Lee	Law, Knobbe Martens
Megha Patel	Business, UCLA Development
Robert Purnell	PM, Pharmacokinesis Corp.
Michael Teyzan	Law, UCLA Law
Alexander Zeng	Law, Knobbe Martens

List of companies attending Biotechnology Career Fair

Company	Lead Recruiter
Advanced Sterilization Products	Estelle Pellegrino
BiVACOR Inc.	Sam Marano
Genentech	Inga Hwang
Gilead	Erika Matthews
Grifols	Regan Castillo
Johnson & Johnson	Dan Gonzalez
Masimo	Elisa Randell
Medtronic	Rebecca Gottlieb
Takeda	Elizabeth Morgan
ZS Associates	Tre McClure

## Professional Development & Career Exposure

In addition to Bioengineering Career Week, BMES UCLA is committed to offering events throughout the academic year that are aimed at **helping our members grow as professionals**. Our industry and academic chairs collaborate to **host workshops** that teach students about different aspects of career development that cannot be found in the classroom, such as resume design and LinkedIn usage.

This year, the executive board also aimed to **diversify the types of career opportunities and pathways** that students are exposed to at UCLA. Previously, we had received feedback that bioengineers often feel “trapped” into thinking that they can only pursue research and development careers that require a Master’s degree or PhD. To help bridge the gap between students and the enormous number of careers

available to bioengineers, we hosted **information sessions with different graduate programs** (not just PhD tracks) and debuted the **Medical Device Forum, a panel followed by a networking lunch** with lawyers and industry professionals, that taught students about product development and patent law. BMES was honored to host Andrei Iancu, the Director of the United States Patent and Trademark Office for an exclusive Q&A. An additional spring forum about device regulation had to be cancelled due to campus closure.

Unfortunately, the annual **Science Vendor Expo** was also cancelled. The Science Vendor Expo is a valuable event that brings biotechnology companies to campus to meet with students and labs about recruitment opportunities and the purchase of laboratory technology.



	Date	Cost	Attendance
Keck Graduate School Infosession	11/14/19	\$45.91	12
UC Berkeley : Masters in Translational Medicine Infosession	11/19/19	\$111.33	32
Medical Device Forum: Patent-Panel and Q&A with Andrei Iancu	1/31/20	---	109
Medical Device Forum: Networking Lunch	1/31/20	\$1,782.66	79
LinkedIn Workshop (virtual)	4/15/20	---	10
Science Vendor Expo (cancelled)	4/6/20	---	---
Medical Device Forum: Regulating Medical Devices (cancelled)	4/17/20	---	---
How to Have a Productive Summer	7/2/20	---	TBD

*List of Medical Device Patent Forum panelist/guests*

Panelist/Guest	Company
Luke Burton	Associate, Jones Day
Darby Chan	Associate, Wilson Sonsini
Robert A. Green	Partner, LRRC
Jessica Hudak	Associate, Gibson Dunn
Sabing Lee	Partner, Knobbe Martens
Rabi Narula	Partner, Knobbe Martens
Katie O'Sullivan	Associate, Kirkland & Ellis
Richard Yoon	Microvention Terumo
J. Galen Yu	Foley & Lardner LLP
Andrei Iancu	Director, USPTO



*List of confirmed Regulatory Forum panelist/guests*

Panelist/Guest	Position
Ellen Flannery	Director , Policy
Elizabeth Hillebrenner	Ass. Director, Regulatory Programs
Edward Margerrison	Director, Office of S&E Labs





## Recruitment Opportunities

Building from our events that help UCLA students grow as professionals, BMES UCLA opens the door for students to find full-time or internship opportunities at companies. We host **on-campus information sessions with company recruiters** where representatives can provide personalized presentations about the company and available positions. During these sessions, students can submit their resumes and get their own questions answered.

BMES also conducts **campus visits to local biotechnology companies** to meet with representatives and become acquainted with company culture.



	Date	Cost	Attendance
Abbott: Clinical Training Program Information Session	10/22/19	\$67.83	25
Edwards Life Sciences Irvine Campus Visit	2/11/19	\$33.90	9
Azzur Consulting Group Information Session (virtual)	5/5/20	---	25
Takeda Infosession (cancelled)	Spring	---	---
Abbott Information Session (cancelled)	Spring	---	---
Neural Analytics Campus Visit (cancelled)	Spring	---	---



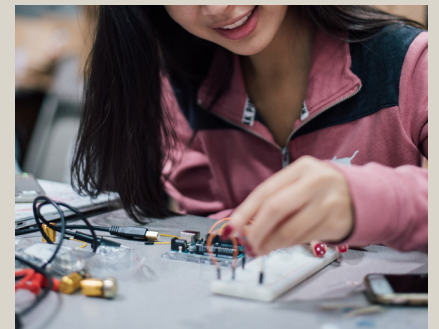
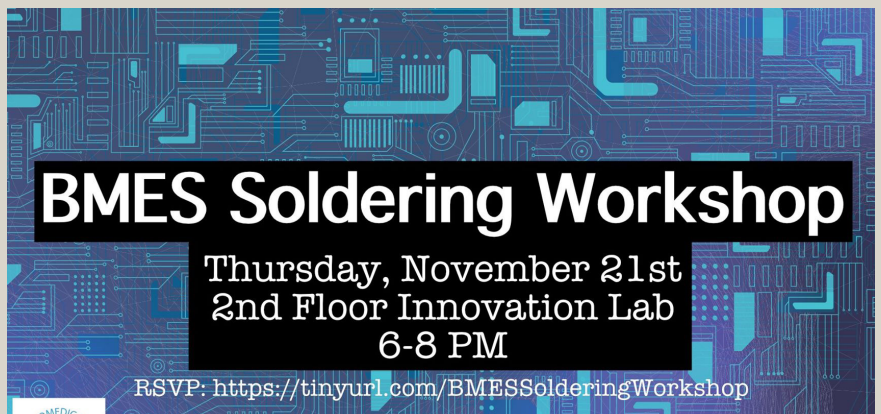
# TECHNICAL PROJECTS FOR PROFESSIONAL DEVELOPMENT

The technical projects section of BMES was first founded in 2016 to help train engineers in fundamental skills necessary to succeed in a professional engineering environment and has been expanding ever since. BMES funds three technical projects teams: Build Team for beginners, Cell Team for students interested in wet lab research, and Design Teams for experienced engineers who want to compete in product design. This year, we have expanded to launch a series of open, beginner-friendly workshops and collaborations with Sling Health to develop medical devices.

## Technical Workshop Series

One of the new programs launched this year, the Technical Workshop Series was intended to give **opportunities for students to build fundamental skills** to succeed in engineering. These workshops included hardware skills such as soldering, software skills such as Arduino and Computer Aided Design, and soft skills such as Technical Public Speaking in Industry. Interested students were able to learn without paying for their own supplies or software.

All of our workshops are **led by one of our Technical Projects Program managers** with experience in the field, and include opportunities for **guided, hands-on practice sessions** during the workshop so students leave feeling comfortable with their new skill.



	Date	Cost	Attendance
Soldering Workshop	11/21/19	\$42.84	22
Technical Public Speaking in Industry Workshop	1/19/20	\$73.13	17
Arduino Workshop with Renewable Energy Assoc.	3/4/20	\$108.33	63
Computer Aided Design (CAD) Workshop (Virtual)	5/19/20	---	12
PCB Workshop with SWE (cancelled)	Spring	---	---

## Build Team: Pulse Oximeter


Our Build Team is considered the **beginner-level technical project team** and is led by four Build Team Project Managers that guide members through the construction of a pulse oximeter. This team consists of 30 students with little to no hands-on engineering backgrounds. They attend monthly modules that teach basic introductory engineering concepts in circuitry and electrical engineering and weekly office hours to further their hands-on work with project managers.

Students work in groups to learn wiring and Arduino practices required to **build a pulse oximeter**. During the Spring Quarter, these teams complete a final design project in which they personalize their pulse oximeters with options such as soldering a final board or 3D printing a case. (Final projects were incomplete due to campus closure.)

## Build Team Annual Budget

Item/Expense	Cost
9V Batteries	\$10.99
Charger	\$16.37
Breadboards	(provided)
Wires	(provided)
Circuit Supplies	(provided)
Arduino Unos	(provided)
<b>Total</b>	<b>\$27.36</b>

	Date	Attendance	Curriculum
Module 1	10/17/19	30	Intro to Circuits: Students learned the basic concepts of circuits such as Ohm's law, resistance, and voltage dividers.
Module 2	11/7/19	30	Intro to Coding and Arduino: This module covered coding in the Arduino IDE and the function of the Arduino pins. Students learned about variables, functions, operators, and other coding fundamentals in C++.
Module 3	1/9/20	30	Review and Solutions: Students were given a problem set to work on over winter break that covered the topics learned in previous modules. The project managers went over common mistakes and problem set solutions.
Module 4	1/16/20	30	Arduino, Analog, Blood Spectroscopy: Students learned about spectroscopy and how a pulse oximeter works. They also learned about analog signals and variable resistors.
Module 5	1/30/20	30	Advanced Circuitry: This module introduced transfer functions, operational amplifiers, capacitors, and filters. Students apply these concepts when building their pulse oximeters.
Module 6 (cancelled)	---	---	CAD and 3D Printing: This module would have taught computer aided design (CAD) and 3D printing. Students would have created cases and customizations to their pulse oximeters.



**BUILD TEAM  
MODULE 1:  
INTRO TO  
CIRCUITS**

10/17/2019  
6-8 pm



## Cell Team Annual Budget

Item/Expense	Cost
OptMEM and Lipofectamine 3000	\$98.71
3T3 Fibroblasts	(donated)*
Micropipettes, pipette tips, flasks	(donated)*
Light microscopes	(donated)*
Cell culture supplies	(donated)*
Assay supplies	(donated)*
Total	\$98.71

\*Supplies donated by department labs

Cell Team offers 12 undergraduate students an opportunity to train in **wet lab research skills** taught by two experienced undergraduate Program Managers. At UCLA, conducting research is vital to the bioengineering experience, and this program aims to help students gain the skills necessary to succeed in a laboratory research setting. (Final projects were incomplete due to campus closure, and were instead replaced with virtual journal clubs.)



	Date	Attendance	Curriculum
Module 1	10/22/19	12	Cell Basics: Cell structure, cell types, basics of microscopy, and lab safety skills
Module 2	11/4/19	12	Western blot protocol, BCA assays, gel electrophoresis, and micropipetting skills
Module 3	11/18/19	12	Immunostaining and microscopy
Module 4	1/9/20	12	Purpose and protocol of cell culture; confluency, trypsinization, and split ratio
Module 5	1/27/20	12	Methods of cell counting (hemocytometer, cell imaging, flow cytometry), MTT and Live-Dead assays
Module 6	2/12/20	12	History of gene editing and transfection protocol
Module 7	3/10/20	12	Getting Involved in Research Workshop
Module 8	4/21/20	12	Tissue Engineering introduction
Module 9	4/28/20	12	Journal Club 1: Dental stem cell delivery
Module 10	5/5/20	12	Journal Club 2: Pancreatic stem cell differentiation and journal analysis
Module 11	5/11/20	12	Poster Presentation Workshop: Elements of a poster, good poster design, and the art of a scientific presentation

## Design Teams

For engineers with more experience who want to use their engineering skills to compete at a national level, the Design Teams give students the ability to work on a team to **build a novel device** without any budget restrictions.

These projects are **student-proposed and student-led** throughout the academic year; program managers hold individual meetings and prototyping sessions and operate as individual start-up teams with BMES financial support. At the end of the year, these teams would submit their designs to national competitions.



## Integrated ECG

This project was aimed to develop a **bluetooth-integrated electrocardiogram (ECG)**, that was low-cost and portable with wide accessibility and application. This cross-functional team focused on circuit optimization and app development.

### ECG Annual Budget

Item/Expense	Cost
PCB	\$19.00
Bluetooth Modules	\$23.09
Adafruit supplies	\$36.77
Conductive Fabric	\$19.11
Peltier w/ heat sink	\$17.51
Toggle Switch	\$6.56
Other (motors, brace)	\$60.20
<b>Total</b>	<b>\$178.94</b>

## Arthritis Therapeutics

This project integrated heating, cooling, and massaging features into a knee brace **to reduce pain and swelling for arthritis patients** and increase range of motion. Team members learned circuitry, CAD, 3D printing, PCB design, and app development skills.

### Arthritis Annual Budget

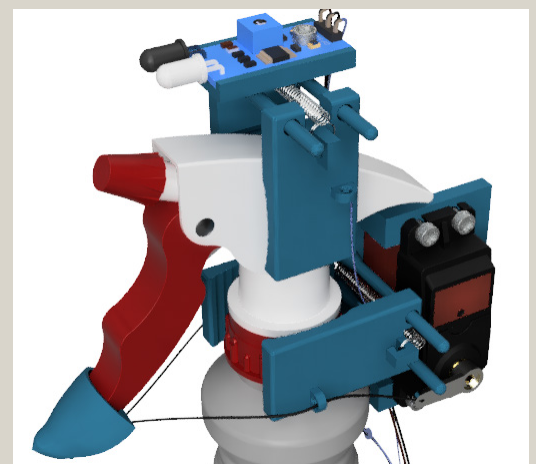
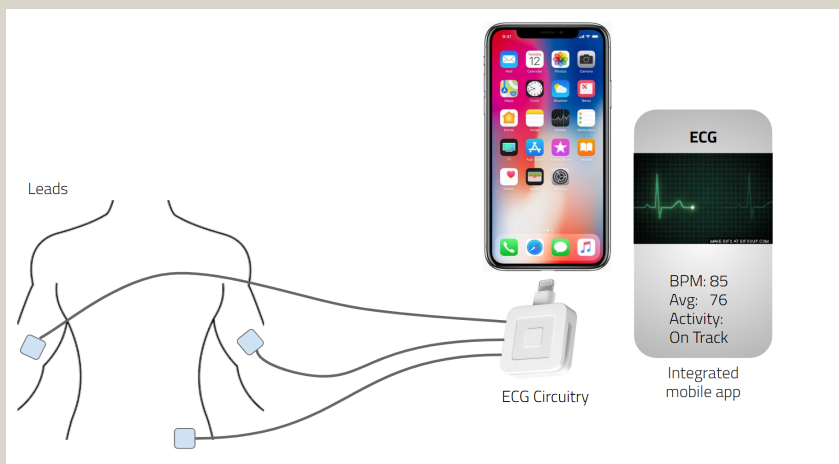
Item/Expense	Cost
Peltier w/ heat sink	\$47.17
Temperature sensor	\$10.99
Arduino Nanos	\$13.99
Bluetooth module	\$7.99
12V power supply	\$10.99
Heatsrink, 2-relay	\$15.97
Breadboard, wires	\$14.48
<b>Total</b>	<b>\$121.58</b>

## Automated Sterilization

This device aimed to mechanize cell culture and fits over an ethanol spray bottle nozzle and **allows users to disinfect their lab equipment without the use of their hands**. Students on this project gained skills in Arduino, fluid control, and CAD.

### Sterilization Annual Budget

Item/Expense	Cost
Nano microcontroller	\$13.99
Spray bottle	\$7.69
Micro-servo gear	\$9.99
9V battery	\$6.54
Waterproof Servo	\$19.69
Rechargeable battery	\$10.86
Battery holder	\$6.72
<b>Total</b>	<b>\$75.48</b>



## Other Technical Projects Activities

	Date	Cost	Attendance
Technical Projects Infosession	10/2/19	\$196.65	70
	Students learned about the different Technical Projects teams and how to join them from the program managers.		
Sling Health Pitch Day	11/18/19	\$381.06	29
	In collaboration with Sling Health, a medical devices entrepreneurial student organization in the Geffen School of Medicine, BMES Design Teams and Sling Health representatives recruited engineers, business students, and medical students to develop products for future launch.		
Build Team Socials	11/20/19, 3/6/20	\$75.41	23
	To foster friendship and collaboration between Build Team members, the project managers coordinate quarterly, friendly get-togethers so the managers and students can get to know each other better.		
Cell Team Socials	2/5/20, 3/2/20	\$105.00	10
	Cell Team Project Managers invite the cell team students to get to know each other outside of the lab over dinner. This helps build team morale and is intended to help students select their teams for their final Spring Design Project.		
Design Team Social	3/9/20	\$150.00	11
	Team members learn to work together in an escape room exercise for a night of bonding and puzzle-solving.		
Technical Projects Social	3/10/20	\$50.00	13
	All students participating in Technical Projects teams are encouraged to mingle and learn more about what each team is working on over dinner.		
Technical Projects Showcase	5/26/20	---	50
	Students from every Technical Projects Team present on their experiences for the past academic year. Because of campus closures, teams did not complete their final projects, and will instead be presenting on the major concepts they've learned and current prototype models.		
Sling Health Demo Day (cancelled)	Spring	---	---
	Teams formed from the Sling Health Pitch Day present their device prototypes and next steps towards a successful product launch to both engineering and medical students and faculty.		

# NATIONAL BMES MEETING

BMES UCLA first attended the National BMES Meeting two years ago for the 2018 Student Chapter Awards Presentation. We were honored to attend the meeting for our second time last year to accept the Commendable Achievement Award for a Student Chapter. We hope to continue to build our attendance and participation at future meetings.

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	Award	Presenters
2018 Annual BMES Meeting	Outstanding Outreach Award	Eva Chen Meagan Yuen
2019 Annual BMES Meeting	Commendable Achievement Award	Mandy Hung Izabella Samuel

## Goals for Future Meetings

Since BMES UCLA is relatively new to attending the Annual BMES Meetings, we hope to incorporate the conference as part of our annual traditions to improve professional development.

Our plan to increase participation at the national BMES meeting is as follows:

- Bring all four executive board members to attend the conference
- Be able to finance any board member that is interested in attending the meeting
- Hold applications for general organization members to attend the meeting
- Collaborate with the department for faculty members, graduate students, and undergraduate students to coordinate travel, lodging, and presentations together
- Encourage attendance of workshops and presentations to be later brought back to UCLA and shared with the rest of BMES UCLA in a presentation recapping the national BMES meeting experience



*2019 Presenters for the Commendable Achievement Award Mandy Hung and Izabella Samuel*

## FUTURE DIRECTIONS

As the current executive board of the 2019-2020 school year graduates from UCLA, the incoming executive board for the following school year has been selected. The incoming leadership team will be expected to uphold the major programs introduced this year, and also to continue to produce innovative programming. The selection of these student leaders was informed by our confidence in their abilities to establish their own contributions that will support the BMES mission.

Both the outgoing and incoming executive board members have collaborated on the identification of important chapter milestones and goals, as BMES UCLA strives to constantly improve its programming to better serve its members. The goals and expectations for the following year have been further elaborated on in this report. The incoming executive board has also released a statement outlining how they will approach these goals in the coming year.



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# SUMMATION OF GOALS

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ACHIEVED DURING THE 2019-2020 ACADEMIC YEAR



## Introduced cross-campus collaborations

The debut of the Sling Health collaboration has enabled BMES UCLA to have a more active role in the UCLA community. Students now have an opportunity to apply their bioengineering interests by working on prototypes for future start-up proposals with medical students.



## Increased recruitment opportunities

This year, more bioengineering students than ever have reported that they will be working for a company, either full-time or through an internship, this summer. Our career-based events have involved more companies, professionals, and opportunities for our members than ever.



## Educated students on bioengineering roles

Previous feedback indicated that students do not feel prepared for the different careers paths available to them. Our academic and industry events focused on helping students learn about every unique pathway engineers can follow with their degree.

IDENTIFIED FOR THE 2020-2021 ACADEMIC YEAR



## Further develop welcoming environment within chapter

This year, our efforts to engage first-years have been successful in increasing involvement from freshman students. We would like to utilize suggestions we received from our transfer students to direct more focus into transfer-specific programming to establish a more welcoming space for all students.



## Expand the external bioengineering community

Recent events have catalyzed an increased passion for establishing a larger community outside of UCLA BMES. To achieve this, we plan on connecting and collaborating with local collegiate BMES branches and alumni to create new social, professional, and technical events to improve our relationships.



## Create new, inclusive technical opportunities

To accommodate growing interest in technical projects, we aim to expand the breadth of project ideas to provide students with niche and applicable skill development. Additionally, we plan to host a bioengineering-themed Hack-a-thon, open to all students interested in prototype design and skill exploration.

# EXPECTATIONS

FOR BMES UCLA

LINNET CHANG, NEXT YEAR'S PRESIDENT, ELABORATES ON THE UPCOMING PRIMARY DIRECTIVES OF BMES LEADERSHIP.

For the upcoming school year, immediate internal goals include further expansion of mental health awareness within the Mentorship division; focus on transfer-tailored events; and increased breadth of technical projects and workshops offered to any undergraduate student interested in bioengineering.

We recognize that **mental health** is a sensitive, but important, subject that should be discussed to destigmatize feelings that many engineering students may experience. We hope to integrate these conversations into fun, social-based Mentorship events, where students can use activities as platforms for candid discussions. With regards to **Transfer-specific events**, we realize that the transition from community college to UCLA can be difficult; the sudden switch from semester to quarter system may interfere with established studying methods and upper-divisions may be hard to navigate. Ideas to target these challenges include an "Academic Advice" event at the start of school and finding better ways of grouping transfers within Mentorship families. Through this, we hope that transfer students will find a stronger community with BMES as a resource and as a family. Lastly, the scope of **technical projects** will be expanded by onboarding more Design Team PMs with diverse backgrounds, exploring new project ideas such as data modeling, prosthetics, hydroponics, and a computer-aided project within the biomedical scope. This will not only broaden the options of what students can explore, but also the amount of students we can take on and offer a valuable opportunity to develop more technical skills.

Long-term goals that we plan to implement next year encompass a **bioengineering-themed Hack-a-thon**, **expansion of the Bioengineering Career Fair**, and **establishment of connections with other collegiate BMES branches and UCLA Bioengineering Alumni** to facilitate

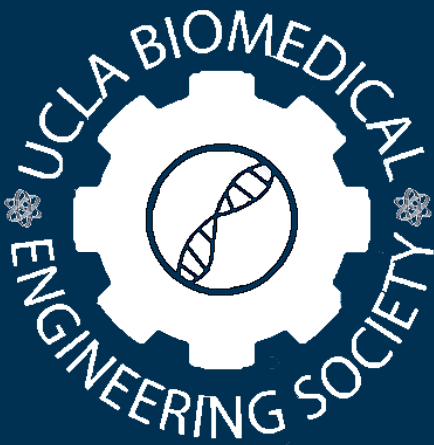


the development of a stronger community.

The Hack-a-thon is envisioned to be a weekend-long event where students, in teams of four to five, will create prototypes that will solve the presented problem. Potential technical workshops to be held include CAD techniques, 3D-printing, Python coding, and Arduino 101, which will be led by students within various student engineering groups such as ASME, IEEE, and ACM. We hope that this event will cater to students' high interest in bioengineering and BMES technical projects, furthering our mission to create a stronger community. The Technical Projects Vice President has already secured permission to use the UCLA Makerspace and will coordinate the purchase of supplies. The External Vice President will secure funding through UCLA grants and sponsors, and the President will be responsible for connecting with other student organizations and the department for additional resources.

Inspired by recent COVID-19 events, we believe that **strengthening our community outside of UCLA** is more important than ever. We are establishing relationships with local BMES branches at UCI, UCSD, UCR, and USC to put on larger social, professional, and technical events. Additionally, within this goal we are reaching out to more alumni to connect undergraduate students with more professional and postgraduate resources. This goal will be furthered through a new Alumni/Undergraduate Networking Dinner during Bioengineering Career Week, increased alumni involvement in Career Panels and the Career Fair, and establishing quarterly Alumni Newsletters to highlight major BMES events and to spotlight our alumni's successes.

Linnet Chang  
'20-'21 Chapter President  
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