

Chapter Development Report

Tecnológico de Monterrey BMES Student Chapter
May 2020 - June 2021



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Executive Summary:

The Biomedical Engineering Society Chapter at Tecnológico de Monterrey took this year in stride, overcoming many challenges. We consider this term to be rather satisfactory, given that even when being faced against the COVID-19 pandemic we were able to fundamentally adapt our techniques and abilities to transition our mission towards a digital output.

This term has been unique in contrast to past ones, as for the first time our chapter has been divided by a large distance. The pandemic forced us into a position filled with many challenges and obstacles for a fluid work system. We weren't able to build a single physical event. Our first day into our term was conducted through a Zoom meeting; which undoubtedly shook up our team's dynamic. However, we did not falter, and as a chapter and as a community, were able to completely translate our chapter's vision into a digital reality.

The role of BMES within our community has been to strengthen the bond between the professional and educational side of our fellow peers. To have this mission kept constant within this term, we pursued our chapter's previous term and their goal: we worked in synchronization with another three main universities within the Mexican Biomedical Community, all under the banner of "BioMexica".

Not only did we accomplish this daunting task, but we also pushed the boundaries of our social capabilities further, forming a social program which sought to educate and help strengthen the future of the biomedical community.

We, as a group, feel very proud of our performance within this term, and are glad to present our achievements within the 2020-2021 term.

****NOTE:** In case of any translation within our visuals, let it be of the posters and/or material provided, being required please contact the authors**



To whom it may concern,

The Biomedical Engineering Society Chapter at Tecnológico de Monterrey has undoubtedly been a symbol of strength, unity, and leadership amongst the community. We have aimed to be not only a professional guidance group for our fellow BME undergrads, but a group they can look for and rely on for any doubts. We see ourselves as a family of biomedical engineers, focusing on creating new and more diversified events to provide a priceless educational and professional experience towards the community. Even facing such a daunting situation as the pandemic, we did not falter and strode on to create seminars, workshops and job fairs to provide a close link for all of our peers. Our unending search for a better tomorrow is what has driven us, and our goal is to inspire our fellow engineers to search and explore the beautiful field that is Biomedical Engineering.

Even though ours is the only chapter to be in Mexico, we further tried to expand our reach in propagating a healthy, driven sense of identity and research. To achieve this, and truly accomplish BMES' mission on a digital level, we sought after a dream: Unity. We took action and used the sense of leadership the previous term showed, pursuing an even more solid alliance with two major universities within the Mexican biomedical community. We achieved a fluid, synchronized unity amongst our peers under the banner of "BioMexica", a revolutionary event amongst the community, by unifying this trinity. BioMexica was a great triumph, as we created a very vast mix of workshops, seminars, and eye-opening research papers which widened all of the participant's skill sets, knowledge, and appreciation for the art of Biomedical Engineering.

This event has established a natural, fulfilling alliance between us and our peers, granting us not only the honor, but the responsibility of further expanding the reach of our field. Not only have we focused on establishing a solid foundation for many interuniversity events to come, but have formed a social responsibility project, named "MediCode", with the primary function of boosting younger student's (teenager's) interest towards pursuing a career in a STEM field. Amidst such a drought of public and immediate interaction, we feel this sort of event is very much fulfilling in our mission. Our drive is not only to create awareness of our field, but to ignite a fire of curiosity and interest amongst the next generation of Biomedical Engineers.

Even facing the cold reality of Covid, and realizing that not a single one of our events could be done face-to-face, we chose to stand strong and push for a more welcoming and direct link for our fellow peers. We believe that sometimes the face we show to the world needs to be one of security and will, despite the chaos that might be surrounding us.

Following this motto, we have further explored and established a strong sense of community and education with events such as "BioEnetix" and the Solid Works course we provide at a yearly rate. To challenge and inspire our peers has been one of our greatest joys, as we provide a closer, more welcoming sense of brother and sisterhood. We feel like we have strengthened this and more within the Tecnológico de Monterrey. We are very proud of our term, and look forward for what the future terms of BMES might bring to our community.

With many thanks and our warm regards,

BMES 2020-2021 Tecnológico de Monterrey Chapter.

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I. Administrative Report

An internal vote was held at the end of our previous term in order to select our current president and vice president. Later, said students held interviews to elect students who wanted to be directors during this term. Once selected, those directors were given the liberty to interview candidates for their coordinators. This year's board consisted of fifteen members.

Below the president we had three levels of hierarchy: Vice-president, directors, and coordinators. (Respectively) Said positions are inspired from five different areas according to the standardized student group structure our university (Tecnológico de Monterrey) uses. Said directors were: general director, strategic planning, marketing, finances and social responsibility (see management tree below). Each director received instructions from both the president & the vice-president during weekly board meetings. Allowing them to manage and coordinate their tasks alongside their coordinators.

a. Executive board

Daniel Angus Hernández Gallegos (**President**)

a00824836@itesm.mx

Duties: Oversee operations, assign deadlines, manage relations, and attend meetings with local student groups and industry officials.

Rafael Abrego Ramos (**Vice president**)

a01720136@itesm.mx

Duties: Oversee operations, assign deadlines, manage relations, and attend meetings with local student groups and industry officials.

Federico Zertuche González (**General Director**)

a01382251@itesm.mx

Duties: Assisting the president and vice-president to oversee all operations. Attended meetings with local student groups, and played a big role assisting all directors.

Julio Alejandro Riojas Machuca (**Strategic Planning Director**)

a01231835@itesm.mx

Duties: Register events with university officials, and oversee planning and logistics of each event.

Héctor Manuel Cárdenas Castro (**Finance Director**)

a01114524@itesm.mx

Duties: Plans budget for each event and manages financial records of the chapter.

Anna Paula Regalado Becerra (**Marketing Director**)

a01246368@itesm.mx

Duties: Manages social media and general communication with members and alumni.



Daniela Peña Gómez (**Social Responsibility Director**)

a00825423@itesm.mx

Duties: Plan and oversee development of volunteer and community outreach activities.

Mei Li Luisa Cham Pérez (**Strategic Planning Coordinator**)

a01139386@itesm.mx

Duties: Manage staff and logistics of each event, make sure reservations made are available before events.

Graciela Alejandra Rincón López (**Logistics Coordinator**)

a00827270@itesm.mx

Duties: Aid Strategic Planning Director and coordinator in duties

Jose Manuel Villarreal Martinez (**Logistics Coordinator**)

a01720112@itesm.mx

Duties: Aid Strategic Planning Director and coordinator in duties

Marjorie González Macías (**External Relationships Coordinator**)

a01570188@itesm.mx

Duties: Aid Strategic Planning Director and coordinator in duties

Francisco Gerardo Valenzuela Pérez (**Financial Campaign Coordinator**)

a00825617@itesm.mx

Duties: Arrange and manage sponsorship opportunities for each event, aid in keeping financial records of chapter.

Karla Isabel Salazar de la Paz (**Image Coordinator**)

a00826420@itesm.mx

Duties: Create posters for each event and promote events amongst alumni and collaborators.

Ana Lucia Soria Cardona (**Social Media Coordinator**)

a00827565@itesm.mx

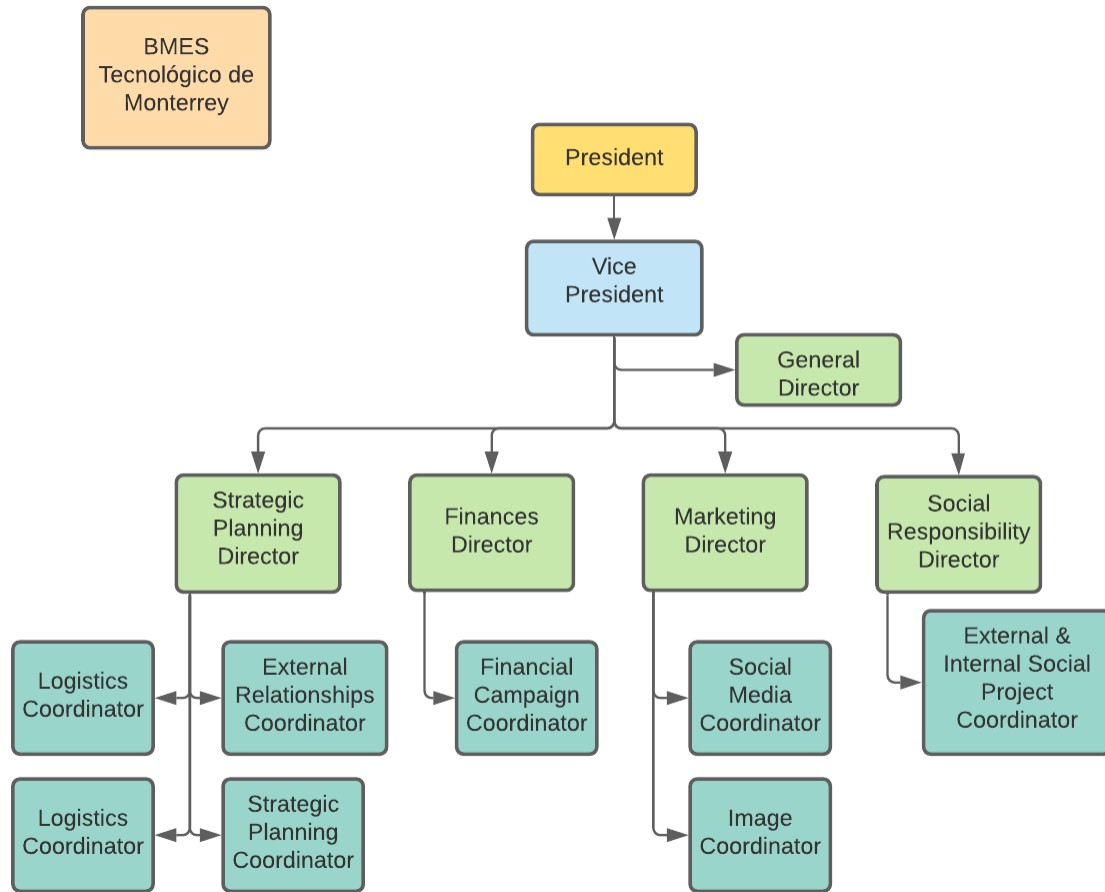
Duties: Aid Marketing Director and Social Media Coordinator in duties.

Yolanda Carolina Carranza Hernández (**Social Project Coordinator**)

a00827184@itesm.mx

Duties: Create and arrange content for projects in development while managing relations with organizations in need of volunteer work.

b. Management divided by areas



c. Membership

Academic Year	Chapter Members	National Members	Fraction of Biomedical Engineering students participating in chapter activities
2020 - 2021	70	16	85%

d. Executive and general body meetings (All through Zoom)

Meeting Type	Dates	Attendance	Fraction of members
Executive body meetings	May 2020-June 2021 Weekly meetings (cancelled during exam week)	15	21%
Faculty Advisor meetings	May 2020 - June 2021 Bimester meetings	5	7%
General body meeting	May 2020 - June 2021 Every 3 months	70	100%

1st Semester	
Date	Agenda
August 13, 2020	Initialize operations. Talk about each area's responsibilities and all events which will be had; permitting directors to manage their time and coordinators.
August 17, 2020	Began organizing the first major event: BiomedICAST. Discussed podcast episode (released that weekend).
September 17, 2020	Began preparations for SolidWorks workshop. Discussed internal marketing strategies. (Promoting events, workshop, companies)
September 24, 2020	Final preparations for SolidWorks workshop. Discussed podcast episode. Began promoting events.
October 1st, 2020	SolidWorks workshop initialized. Did preparations for it to continue working smoothly + began preparations for MatLab workshop.
October 8, 2020	Finalized preparations for MatLab workshop. Began working on preparations for "IMD week" alongside our universities student association.
November 12, 2020	Preparations for the event with SaCI, discussed BMES membership payment and documenting semester for our school administrators.

November 19, 2020	<p>BiomedCAST part 2 preparations. Discussed finalized MatLab and SolidWorks workshops.</p> <p>We were also awarded the best pilot social project of the university.</p>
November 25, 2020	<p>Discussed end of semester preparations. Began preparations for next semester:</p> <ul style="list-style-type: none"> - Discussed BioMexica - Membership payment - Next semester events

2nd Semester	
Date	Agenda
January 4, 2021	Bioenetix Planning Operations, Job Fair Planning
January 5, 2021	Bioenetix Planning Operations, Job Fair Planning
January 6, 2021	Bioenetix Planning Operations, Job Fair Planning
January 7, 2021	Bioenetix Planning Operations, Job Fair Planning, Initialize operations with all the members of BMES chapter.
January 8, 2021	Meeting with Alvarez - Trujillo Laboratories (BioEnetix Planification)
January 11, 2021	Meeting with the Computational Technologies Engineering Society (Bioenetix Planification)
January 12, 2021	Job Fair Planning
January 13, 2021	Job Fair Planning
January 14, 2021	Meeting with the Biomedical Engineer Student Board (SAIMD)
January 18, 2021	Meeting with the student group "SACI" & organize science week.
January 21, 2021	Contact people for science week.
February 18, 2021	Social service initialized & confirmed the dates for SolidWorks Workshop.
February 25, 2021	Discuss podcast people, promotion of science week & promotion of solid works curse.
March 3, 2021	SolidWorks workshop initialized & started to find the future chapter applicants.
March 11, 2021	BioMexica Planning

March 18, 2021	BioMexica Planning
March 25, 2021	Job Fair final details, meeting with prothesia (BioEnetix)
April 22, 2021	Planning of events for the National Children's Day, Finalization of Solidworks workshop, finalization of BioMexica.
May 13, 2021	BioEnetix Planification, Fetec Awards.
May 20, 2021	Final Meeting before the final event.

II. Treasury Report

***IMPORTANT NOTE:** Given that our chapter is located in Monterrey, Mexico all of our expenses are done in MXN Pesos. Our treasury report was done utilizing said currency. In case that any clarification is needed please feel free to contact any of the authors. Also, it's worth noting that as of May 30 of 2021, the conversion rate from 1USD to MXN peso is \$19.93. (19.93MXN peso per 1USD).

During this administration of the chapter in Monterrey, the treasury division managed to maintain the financial affairs of the group in a stable way from its beginning until the end. When the sanitary restrictions due to the Covid-19 pandemic kicked in, the aim of the whole group was to look for the advantages and opportunities rather than the downsides. With this in mind, we decided to keep offering the usual conferences, events and workshops with the advantage that this time there would actually be less expenses and costs in the organization of such events, as there was no need to rent a physical location for the workshops and conferences. We still managed to keep the events attractive enough to convince people to pay for them. Thus, the financial management gave the group not only a final superavit but also the opportunity to participate in the donation of medical resources to a retirement house.

Expenses

The main

- Withdrawals:
 - BIOMEDICAST
 - SolidWorks course
 - BIOENETIX (to be determined)
- Expenses:
 - BIOMEDICAST
 - SolidWorks course

The expenses made for the events were basically all about hiring instructors for the workshops, buying resources for the community service such as Arduino kits, and the complete license of Zoom Meetings for all our events made 100% online.

Fundraising Events

Tecnológico de Monterrey is an institution characterized for keeping student groups and chapters as autonomous as possible, including financial affairs. The institution only granted us the necessary permissions to make and promote events with the image of the

university, but when it came to the financing, we had to make the necessary events to raise funds and keep the financial viability of the big projects and goals

A really fortunate help that came to us was from the previous administration, who passed to us a positive balance of almost 20,000.00 MXN. This balance helped us with the payment of instructors in our first fundraising events, which were workshops about Matlab and SolidWorks. Now that this administration has come to an end, we are also expecting to pass a positive balance to the next one.

Events	Earnings	Expenses
SolidWorks Course	38,500 MXN	10,000 MXN
BIOMEDICAST	3,300 MXN	1,500 MXN
BIOENETIX	TO BE DETERMINED	TO BE DETERMINED
T-SHIRTS Reward	0 MXN	1,813.11 MXN
Zoom Upgrade	0 MXN	3,000 MXN
Arduino Kits	0 MXN	1,447.09 MXN
Director Licences	0 MXN	2,000 MXN

III. Chapter Activities

All events conducted this term were done through an online modality utilizing Zoom. We conducted a variety of events which all shared the common cause of fomenting and strengthening our communities knowledge and perception of both the STEM field, and Biomedical Engineering as a profession. Particularly, our goal this year was to host events that were engaging and added value to students from any university who simply had internet access. Whether they were in their first semester or one step away from graduation, all people were welcome. Our events focused on three important characteristics which we considered crucial to develop our community: Meeting new people, extracurricular credentials, and learning more about the biomedical engineering field.

a. Social or Other Activities

BMESound Podcast

Spotify link: (<https://open.spotify.com/show/5d6lEVIMw90pScALjTZ3Vf?si=pRRg53ccSYW-NrxGgGxCuA>)
 Creation (August 20, 2020)

Due to the COVID-19 and with the purpose of proportioning a fresh air to online events, this podcast was created with the purpose of giving a greater vision of the biomedical engineering field to students or interested people. In this podcast we talked about issues involved in the professional part of biomedical engineers, from why it is a great career to study to advances in different areas of speciality.



The following list consists of each episode, its release date and a brief description of the episode.

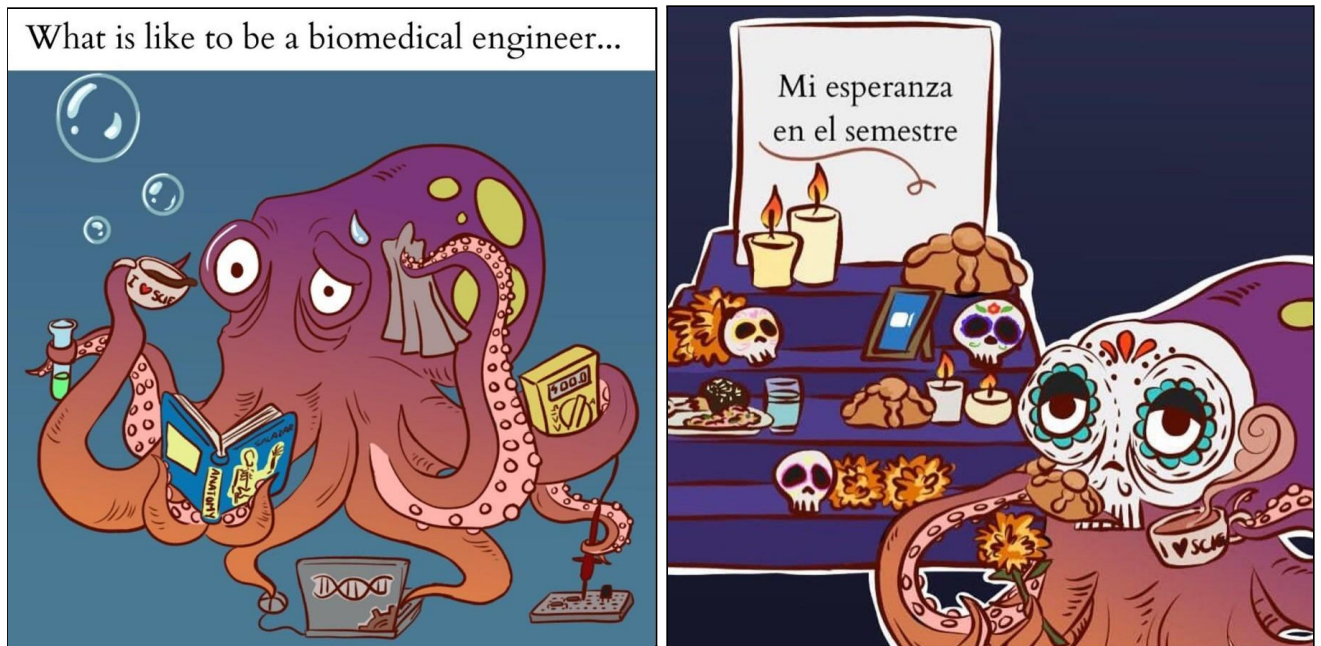
Episode list:

- **Mitos, sueños y aspiraciones (August 13, 2020):** In this episode we talk about what Biomedical Engineering is, how we found out about it, some tips and myths about this career, and what we want to do in the future with this wonderful career.
- **La vida adolescente en tiempos de pandemia (August 28, 2020):** The BMES board of directors talks with the renowned psychologist José Gerardo Borrego about the impact of the pandemic on the lives of young university students. He also gives some tips about how to handle stress and lack of motivation.
- **Experiencia Biomédica ft. Ing. Agustín Carvajal (September 14, 2020):** The BMES board interviews Ing. Agustín Carvajal, a graduate of the first generation of Biomedical Engineering from the Tec de Monterrey Campus Monterrey, who currently serves as Director of the Career at this same institution.
- **Biotecnología en la biomédica ft. Dra. Trujillo de Santiago (October 9, 2020):** In this episode, Dr. Grisel Trujillo de Santiago, co-founder of Alvarez-Trujillo Lab and professor at the School of Engineering and Sciences at Tecnológico de Monterrey, tells us about her biomedical research projects and what their relevance is for the future of science in the world.
- **Ampliaciones Empresariales en Ing. Biomedica ft. Carolina Contreras (January 15, 2021):** In this episode we have as a guest Carolina Contreras, a Biomedical Engineering student at Tec de Monterrey. In this, she tells us about her experience in the search for exchanges to expand his knowledge, as well as how he started his "startup".
- **Biomedical Boom ft. Abiel y Moya (January 22, 2021):** On this special occasion, we have the presence of Dr. Abiel Eugenio Garza Borjón and Dr. Marcos David Moya Bencomo; two iconic professionals in the world of modern medicine! In this episode, we discussed the relevance of sports within the pandemic & biomechanics importance when contemplating exercise.
- **El uso de la vacunación en México: una opción para todos (January 29, 2021):** In this episode we have Dr. Diego Ramonfaur, a graduate of the Tec de Monterrey School of Medicine with a master's degree in clinical research. Here, we have a very important talk in the current environment of vaccines, where we speak from their myths, realities, controversies, vaccination shifts for different age groups and clinical studies, or lack of, for alternative "drugs" to vaccines.
- **Flores, dulces, corazones y prótesis: San Valentín para un Biomedico (February 18, 2021):** Members of our board had a fun talk about valentines, and any related activities or events in our university.
- **La verdad Medica de las adicciones (February 20, 2021):** Our Special Guest: Dr. Mario Gonzalez Aranza, specialized psychiatrist, gives us a medical perspective on the nature of addictions!
- **Mujeres, dudas y reflexiones ft. Dra. Griselda Córdova (March 8, 2021):** In this episode of BMESound we break away a bit from biomedical engineering and take on issues that affect us in real life. Together with our special guest, Dr. Griselda Córdova, we put topics on the table such as the importance of giving women the credit they deserve, in addition to giving them the opportunity to participate, and at the same time questioning words and concepts that have made us think that they are correct, when in fact they are more complex than they seem.

Cost per person	Attendance (Total views)
\$ 0	365

Our pet: Franklin
(May 2020 - July 2021)

At the beginning of our term we noticed that our chapter missed some sort of identity to stand out among our peers. Additionally, we were fully aware that the COVID19 pandemic had just started, and had a heavy toll on our peers. Knowing this, we wanted to develop a fun interactive pet that would not only represent our chapter, but also make students smile and feel pride in being BME students. We decided to use an octopus and named it *Franklin*. As our term developed, we did a variety of promotional events and references utilizing our pet to promote social events. It was a huge success.



Cost per person	Attendance
\$ 0	0

IMD WEEK

(October 12-16, 2020)

The IMD week was a collaboration between our universities Biomedical Engineering Student Association and BMES chapter. An event in which we celebrated the anniversary of the biomedical engineering career in our university with integration activities and conferences.

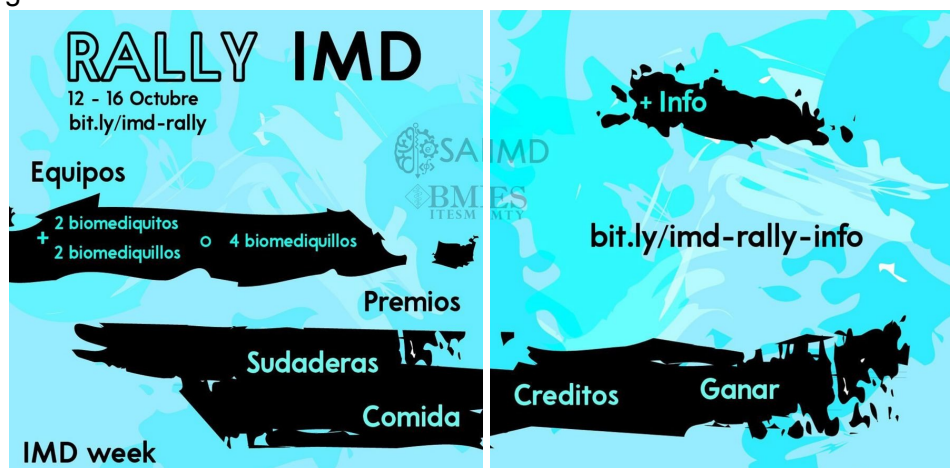


Cost per person	Attendance
\$ 0	150

Rally IMD

(October 12-16, 2020)

The Rally IMD was a collaboration between our universities Biomedical Engineering Student Association and BMES chapter. A rally that was a complement of the IMD Week in which the biomedical engineering students met in teams to solve diverse problems about different subjects related to the career to earn points and win diverse awards. The rally also includes games and mini-challenges to earn extra points and make the competition more interesting.



Cost per person	Attendance
\$ 0	4 teams (4 people per team)

Neuroscience Conference

(November 16th, 2020)

This Neuroscience conference was a collaboration between the Science Student Association and BMES chapter. BMES Chapter brought in a lecturer specializing in neuroscience to talk about the future in this area.



Cost per person	Attendance
\$ 0	100

NanoBiotech Talks

(August 12th - November 18th, 2020)

This event was in collaboration with Alvarez-Trujillo Laboratories and many other Students associations including BMES Chapter. This was an event of Webinars format with the focus on the Nanobiotechnology area. The event consisted of 12 conferences (1 per week) in which the invited speakers were specialists on the field talking about opportunity areas.

—Nanobiotech Talks—

IN COLLABORATION WITH

—Nanobiotech Talks—

International Nanobiotech Webinars - 2020

12

Conferences

Every Wednesday from 12th August to 18th November

Invited speakers from:
 Abdulaziz University
 Harvard Medical School
 Massachusetts Institute of Technology
 Michigan Medical School
 National Taiwan University
 Northeastern University
 Tecnológico de Monterrey
 Terasaki Institute
 Universidad Politécnica de Madrid
 University of California, LA
 University of Connecticut

Organizers
 Grisel Trujillo de Santiago
 Mario Moisés Álvarez

Registration
 Coordinación: Grisel Trujillo de Santiago, Mario Moisés Álvarez

Alvarez - Trujillo Lab

Cost per person	Attendance
\$ 0	55 - 75 per conference

SCIENCE WEEK

(March 1st & 3rd, 2021)

Science Week was an event in which BMES together with other student groups focused on the science area, we seek to promote and motivate people to do science. This event is a science fair where the objective is to make known & show to the Tec community the different research groups, their focus and scope, so that eventually the students find the scientific area of their interest.

SCIENCE WEEK

Feria de grupos de investigación

Lunes 1 de Marzo / 5-7 pm
Miércoles 3 de Marzo / 5 -7 pm

Regístrate en bit.ly/1SW2021

Regístrate en bit.ly/1SW2021

SCIENCE WEEK

3 de Marzo 6:00 - 7:00

BRAIN Initiative

ALAS Wearables
Dr. Mauricio Adolfo Ramírez Moreno

Ingeniería Biomédica

Dra. Irma Nayeli Angulo Sherman
Investigadora en la Universidad de Monterrey (UEM)

Cost per person	Attendance
\$ 0	35-55 per conference

b. Inter-Chapter Activities

BioEnetix:

(June 17 - 19, 2021)

BioEnetix will be our last event of our term. It's still yet to conclude, given that it'll be mid June. However, we're very excited to finish our term with this event.

Bioenetix is an event especially designed for the development of ideas in the health field. The general objective is to stimulate the entrepreneurship of medical technology and young talent committed to innovate and become the next health industry leaders in the world. The event consists of two topics related to the medical industry. Said topics are: Software development / Data visualization, and Biomaterials or Biotechnology. We will present a variety of challenges related to those STEM topics to participating teams and expect them to innovate and develop a solution.

The winning teams will have access to: An internship in the internationally acclaimed laboratory: "Alvarez-Trujillo Lab", and a 3 months full access to Tecnológicos de Monterrey *TecLean* incubator. Winning teams will be able to develop and grow their product and business model while mentored by experts.

We plan to extend an invitation to our event to all BMES Chapters in order for them to promote it in their local communities. We believe our event will be worth the international spotlight, and are very excited to participate alongside other amazing chapters.



BIOENETIX

BMES Chapter (Tecnológico de Monterrey)
Protheisa Inc. (<https://www.protheisa.com/>)
Alvarez & Trujillo LAB (<http://www.alvareztrujillolab.com/>)

LEARN. DISCOVER. OVERCOME.

Bioenetix is an event especially designed for the development of ideas in the health field.

We aim to stimulate the entrepreneurship of medical technology and young talent committed to innovate and become the next health industry leaders in the world.

OUR VISION

Bioenetix's vision consists of fomenting the health industry. We wish to form a borderless community full of passionate engineers and entrepreneurs. Propelling growth inside the health industry, while supporting brilliant minds with great potential to disrupt and become a reckoning force in said industry. We fully believe this event will promote successful thinking, and lead to the development of great projects.

OUR MISSION

- Promote engineer-based solutions for real world medical issues.
- Impulse passionate entrepreneurs and engineering teams to be successful while developing their products.
- Creates a global network for participants to interact between each other and meet other passionate, and future industry leaders.

WHAT IS BIOENETIX?

Bioenetix seeks participants who, in teams of three, will collaborate in the course of three days, evolving and growing as individuals. Finishing our event said teams will have acquired a new and improved visionary factor to innovate and become global impactors.

At the end of the competition, they will pitch their idea to engineers, scientists and experts who will judge all presented solutions & ideas. The top achieving teams will be awarded a variety of prizes depending on the established problems theme.

The top product development team will be awarded an all-paid scholarship to Tecnológico de Monterrey's Innovative Entrepreneurship Zone incubator where high-impact entrepreneurs and innovative teams are supported with access to specialized mentors in cutting-edge sectors, links with funds, external accelerators, financing channels, as well as management workshops which will guarantee the winning's team product to be developed and have a great position in the market.

The top investigation team will be awarded the opportunity to collaborate and have an investigation residence (can be in person or online, depending on the winning's team location) inside the prestigious Alvarez-Trujillo laboratory team. Depending on the proposed project, the winning team might be able to research further their investigation while being fully supported, or complement an on-going investigation.

Other teams will also be awarded access or discounts to future events such as HackingHealth's 2022 Healthathon or the Mexican Society of Biomedical Engineers (SOMIB) national yearly conference. In this event participants are given the opportunity to meet other aspiring engineers, network and gain inspiration for future projects.

Cost per person	Attendance
\$ 10 USD / \$200MXN	TBD (It's in June)

c. Industry or Professional Development Activities

Biomexica:

(April 12 to 17)

Youtube Channel Event: <https://www.youtube.com/channel/UC2mtbiV3IOVEpgM9zCxBS0g>

This event is one which we're truly proud of, given that it's the first-ever Mexican inter-university student coalition of Biomedical Engineering Societies within the Northeast Region of Mexico. This group is made up of BME students from different universities in the Northeastern Mexican area: among them being Tecnológico de Monterrey, Universidad de Monterrey, and Universidad Autónoma de Nuevo León.

The goal of this event was the promotion and prolific dissemination of BME and its various existing branches. In addition to creating a safe and inclusive space for exchanging of ideas, experiences, projects and innovations that will lead the evergrowing field to new potential levels of development and research. Our content consisted of a diversified variety of workshops, conferences and experiences centered around different themes (Biomateriales, Microcontrolers, Imagenology, Neuroengineering, Biomechanics, & Clinical engineering) & scopes within the ample setting that is Biomedical Engineering.

BioMexica was the first-ever Regional Forum of Biomedical Engineering in Mexico which took place in virtual format, and was completely free of charge. It went well and above our own expectations given that we received attendance from a variety of states in Mexico, and even international countries, like Ecuador, Nicaragua, Honduras and Argentina. We're also proud since we also proactively achieved a positive effect in the international arena of the Biomedical Engineering community.

BIOMEXICA

foro.biomexica@gmail.com

SUEÑA.
INNOVA.
INSPIRA.

¡Prepárese para aprender, sorprenderse y explorar el potencial ilimitado de la Ingeniería Biomédica en este evento único y sin precedentes!

Lunes 12 de abril - BIOMATERIALES
Martes 13 de abril - ING. CLÍNICA
Miércoles 14 de abril - MICROTECNO.
Jueves 15 de abril - BIOMECAÁNICA
Viernes 16 de abril - IMAGENOLOGÍA
Sabado 17 de abril - NEUROINGENIERÍA

QUIENES SOMOS

El comité organizador de BioMexica es la primer coalición estudiantil interuniversitaria de Ingeniería Biomédica en la Región Noreste de México.

Este grupo está conformado por estudiantes de Ingeniería Biomédica en distintas universidades prestigiadas del área metropolitana de Monterrey, Nuevo León.



NUESTRO ENFOQUE

- Obtener un alcance nacional, de manera proactiva, impactando en el ámbito internacional de la comunidad de Ingeniería Biomédica.
- La promoción y la divulgación prolífica de la Ingeniería Biomédica y sus amplias ramas.
- Exponer una variedad diversificada de talleres, conferencias y experiencias centradas en el mundo de la Ingeniería Biomédica.
- Fomentar la integridad, liderazgo, innovación y los logros dentro de la comunidad estudiantil de Ingeniería Biomédica.

NUESTRA VISIÓN

Nuestra visión es una comunidad con una divulgación prolífica de la Ingeniería Biomédica y sus diversas ramas existentes, además de la creación de un espacio seguro e inclusivo para el intercambio de ideas, experiencias, proyectos e innovaciones que llevarán al campo a nuevos niveles de desarrollo e investigación.



@biomexica | biomexica | @biomexica_foro

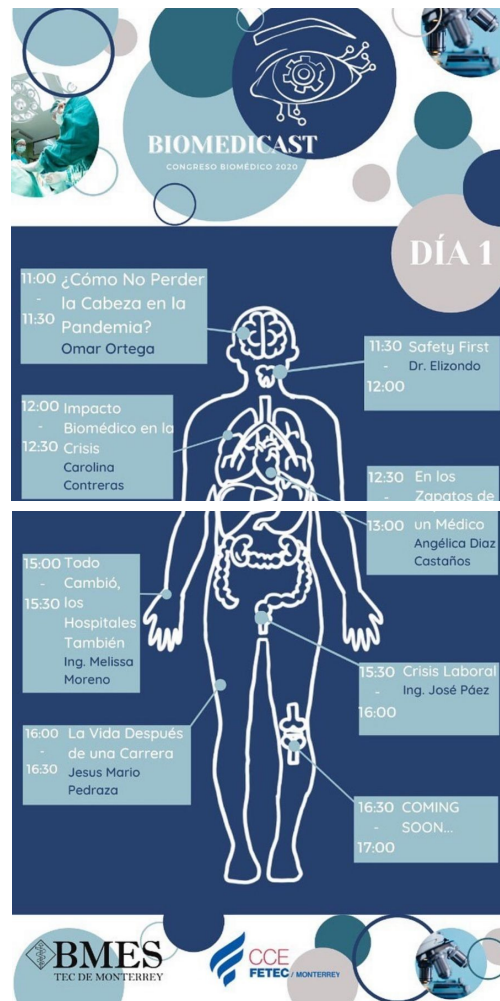
Cost per person	Attendance
\$0 MXN	900

Biomedicast (Pt. 1)

(September 5th, 2020)

Biomedicast is a biomedical engineering congress that consists of exposing the different areas of this career. This first part of the congress had a more in-depth focus on the role that medical professionals played in the pandemic, the labor crisis that was generated and different ways of facing the pandemic without losing mind.



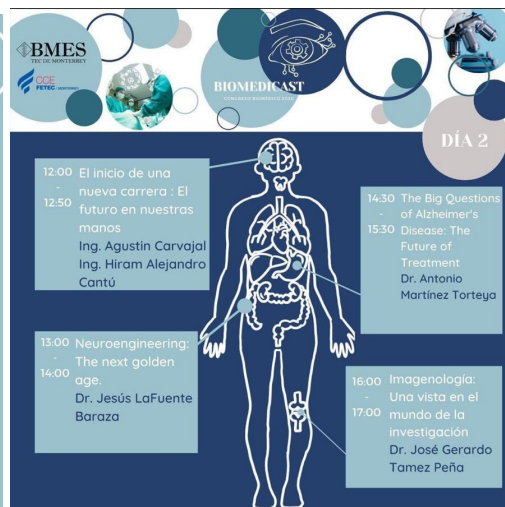


Cost per person	Attendance
\$ 100 MXN	27

Biomedicast (Pt. 2)

(November 13th, 2020)

This second part consisted of a more professional approach and how biomedical engineering is a career with a lot of future, different areas of specialization and some research projects with biomedical focus were exposed .



Cost per person	Attendance
\$ 50 MXN	14

Job Fair

(April 7 - 9, 2021)

This is an event in collaboration with various companies at national and international level. The focus of this event was to show biomedical engineering students and graduates, companies to which they can apply for a job in the future. The companies showed their approaches, work plans and vacancies for the attendees of this event.

FERIA DEL TRABAJO

7 al 9 de Abril



EMPRESAS PARTICIPANTES



BE THE MATCH
MÉXICO
ETALONS
ROOKERIES
DEVELOPMENT
HC PROMEDICAL
INTECSA
INTELLIGEOMÉDICA
BIOLÓGICOS
ESPECIALIZADOS

Cost per person	Attendance
\$ 0	76

1st SolidWorks workshop

(September 26 - November 07, 2020)

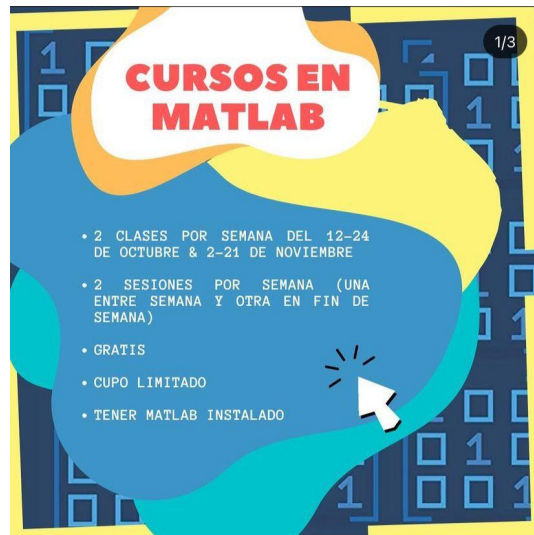
The SolidWorks workshop is an event we have each semester. (Meaning two per chapter term). During the event participants from any major can learn the basics of 3D modelling from our proudly Mexican certified experts, in order to learn SolidWorks and gain enough knowledge to present and pass the CSWA certification exam. The workshop was fully

online, and took place during 5 weekly sessions; 1 introductory session, 4 tutorial sessions and the last session to present the CSWA certification exam. Our institution provides exam keys so that students can take the certification exam when they wish. Our students tend to take said exam after finalizing our workshop. (If they so desire)



Cost per person	Attendance
\$ 500 MXN	46 per session

Matlab Courses



We associated with some professors at our university who are certified experts in MatLab. Given their passion, we enabled them to give free courses to interested students from all degrees to take a fully virtual introductory MatLab course. Said course allowed students with zero programming or MatLab experience to learn the basics, generate data structures, and signal filtering theory/applications. Students took two sessions per week, for a total of four weeks. Meaning that all students had a total of 8 sessions.

Cost per person	Attendance
\$ 0	35-50 per session

2nd SolidWorks workshop
03/06/2021-05/24/2020



The SolidWorks workshop is an event we have each semester. (Meaning two per chapter term). As we previously stated:

During the event participants from any major can learn the basics of 3D modelling from our proudly Mexican certified experts, in order to learn SolidWorks and gain enough knowledge to present and pass the CSWA certification exam. The workshop was fully online, and took place during 5 weekly sessions; 1 introductory session, 4 tutorial sessions and the last session to present the CSWA certification exam.

Cost per person	Attendance (2nd semester)
\$ 500 MXN	35 per session

IV. Societal Impact Activities
a. Medicode

In Mexico only 17% of young adults get bachelor's degrees, this is due to many factors, one of them being that some students are not interested in getting a higher education, much less enroll into a STEM major. This year we executed a project designed to promote gender equality and inspire teenagers to pursue a career in STEM.

Medicode is a course that consists of 12 classes in which the students learn about robotics with a focus on biomedical engineering. The sessions are divided the following way: an introductory one, 3 about programming using C++ language, 7 teaching sessions in which the students will practice the use of Arduino UNO with simple projects. At the end of the course the students had to make a final project that consists of a robotic arm.


Due to the pandemic all the activities were done remotely, the classes were held on zoom and the students simulated the circuit using TinkerCad, a platform that can simulate circuits

and the Arduino IDE. During the year we implemented the course 3 times, the first time was done in collaboration with INJUVE (an institution that promotes education for young people) and the other 2 times we publicated an announcement in the facebook page of Medicode, in which anybody from the ages 12 through 18 that lives in Mexico could register.

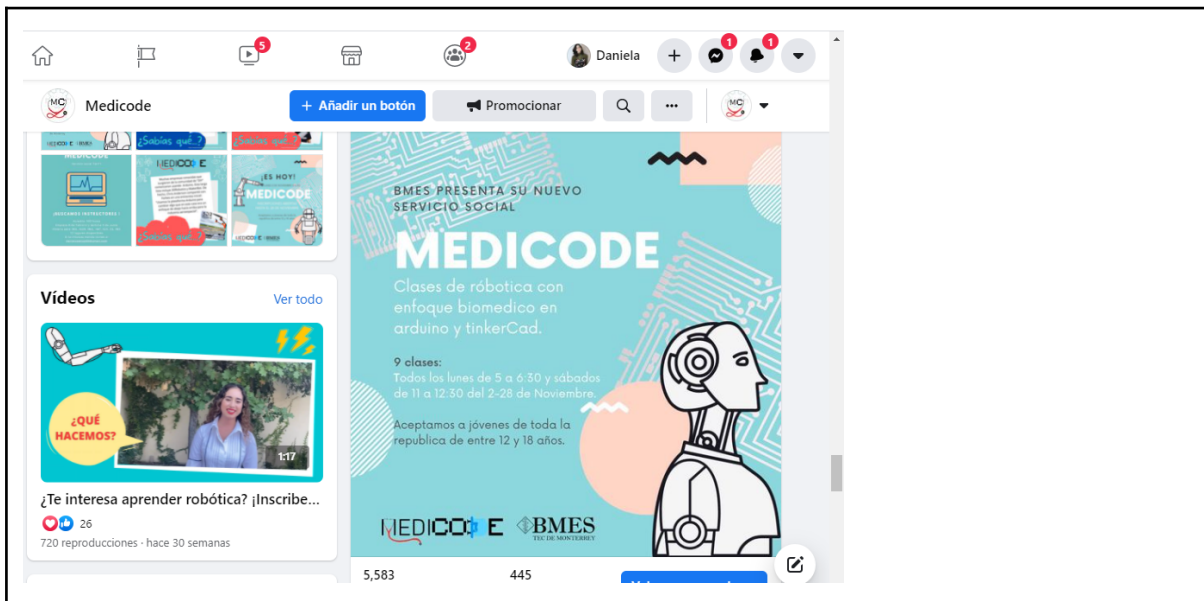
At the end of the course the person with the best project won an Arduino Uno kit, this prize was only given in the second and third time the classes were implemented. The kit was paid with the money the chapter got from other events.

	Dates	In collaboration with:	Number of students that registered.	Number of students that finished the course.	Cost (arduino Kit)
1	25 July 2020 to 26 August 2020	INJUVE	59	13	\$0
2	2 November 2020 to 28 November 2021	No One (Announcements via Facebook)	61	19	
3	25 February 2021 to 24 April 2021	No One (Announcements via Facebook)	38	5	\$697.58

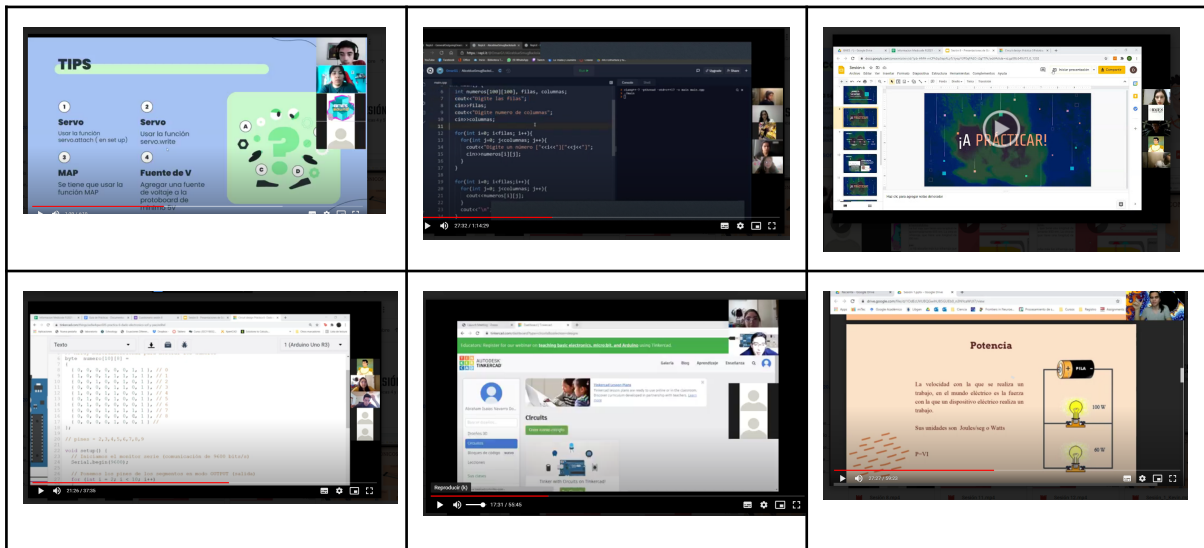
Announcements



The screenshot shows the Facebook page for 'Medicode'. The main post is titled 'BMES PRESENTA SU NUEVO SERVICIO SOCIAL MEDICODE'. The text of the post reads: 'Clases de robótica con enfoque biomédico en Arduino y TinkerCad. 12 clases: Todos los jueves de 5 a 6 pm y sábados de 3 a 4 pm del 25 de febrero al 22 de Abril. Aceptamos a jóvenes de toda la republica de entre 12 y 18 años a excepción de alumnos del Tecnológico de Monterrey'. The post also features a graphic of a person's head with a brain and circuitry, and logos for MEDICOD E and BMES TEC DE MONTERREY.



Classes



One of the most important outcomes of this year is that many people got to learn about robotics and biomedical engineering. Another one is that Medicode is an official social service activity in our University.

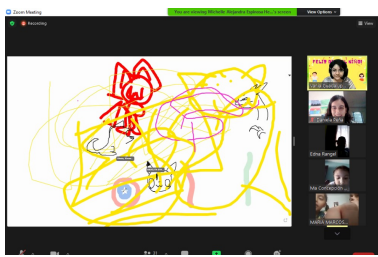
b. Risatión:

Due to the quarantine many kids were forced to stay at home, without many options for entertaining and it is imperative to find new ways to entertain children while at the same time respect the social distances measures. Also many people with disabilities were affected by the lockdown. In our community there is an institution designed to help poor people with disabilities and it has been deeply affected by the lockdown.

We decided to make an event for the kid's day, in collaboration with the town hall of San Pedro Garza García and Instituto un Rayito de Sol (an institution that helps poor

people with disabilities), in which we did activities related to engineering in order to entertain the kids. The event lasted 2 days, the first one was with San Pedro and the second one was with “un Rayito de Sol”.

We also made a donation of medicine to “Un Rayito de Sol”, which includes medicines that don’t require a medical prescription and are much needed by the community. The total spent in the donation was: \$7615.

Organization	Date	images
San Pedro Garza García	29 April 2021	
Un Rayito de Sol	5 May 2021	

V. Future Direction

a. Goals achieved this year:

We were able to fully adapt to the COVID-19 pandemic and the powerful implications that came alongside it. We’re proud that not only were we able to fully adapt all of our events to online modalities, we went even further than that and permitted ourselves to be fully ambitious. Successfully organizing the first ever regional BME forum (in collaboration with other universities) while having international attendance is just the tip of the iceberg. We were also able to:

- Keep a steady income in our finances
- Kept up our workshops
- Linked employers with graduating students even in this harsh economic crisis
- Finalize the first year of our social impact project and foment the STEM field in young Mexican teenagers
- Donate a significant sum of medicines (bought by us) to a foundation
- Begin a podcast focused on BME topics, mental health and self improvement.
- Foment BME community interaction among undergraduates and professionals through a wide variety of conferences.

and knowing that in July we’ll have BioEnetix, our event to foment BME entrepreneurship and innovation among young aspirants makes us truly satisfied with our accomplishments.

b. Chapter outline and expectations for next term

Next terms executive board:

Executive board

Ana Lucía Soria Cardona (President)

a00827565@itesm.mx

Duties: Oversee operations, assign deadlines, manage relations, and attend meetings with local student groups and industry officials.

Graciela Alejandra Rincón López (Vice president)

a0082727@itesm.mx

Duties: Oversee operations, assign deadlines, manage relations, and attend meetings with local student groups and industry officials.

Allison Hernández Sánchez (General Director)

a01366543@itesm.mx

Duties: Assisting the president and vice-president to oversee all operations. Attended meetings with local student groups, and played a big role assisting all directors.

Dacia Martínez Díaz (Strategic Planning Director)

a01733799@itesm.mx

Duties: Register events with university officials, and oversee planning and logistics of each event.

Gerardo Alejandro Fumagal González (Finance Director)

a01284331@itesm.mx

Duties: Plans budget for each event and manages financial records of the chapter.

Yolanda Carolina Carranza Hernández (Social Impact Director)

a00827184@itesm.mx

Duties: Direct the social service for students, and plan activities to help the community.

Maxine Annel Pacheco Ramírez (Marketing Director)

a01551933@itesm.mx

Duties: Create the identity of the chapter and promotional material for the planned events.

Mei Li Luisa Cham Pérez (SOMIB Representative)

a01139386@itesm.mx

Duties: Establish collaborations with the Mexican Biomedical Engineering Society

It's worth mentioning that the selection process for the new executive board that will be established throughout June 2021 to June 2022 was different from previous years. This was due to the fact that an election took place in order to determine the new board. After the announcement for the new executive board was posted on social media, a few other students showed interest in becoming part of the executive board meaning that the electoral process needed to take place. This process had a duration of approximately a week, in which the parties presented their proposals, events and compromises to the student body; alongside these actions, a debate took place where the candidates presented in a more formal manner their ideas for the BMES meanwhile being open to the public's questions. The people who voted were the current members and past members of the BMES Chapter, including president, vice president, directors, coordinators and collaborators, voted via email. After the votes were emitted, a meeting with the Council of Electoral Participation of Tec de Monterrey campus Monterrey, in this meeting the penalties for both of the candidatures were presented and appealed if possible so that the penalty would not take place. Once all of the penalties were revised for both candidatures, the counting of votes and applied the penalties to the candidatures if they had any. After this took place, our candidature was announced as the winner. Following the end of the electoral process, we were required to sign some documents where we accepted the results and our further responsibilities.

Future directive goals and expectations:

For the next year of management, our expectations are; maintain and increase the level and recognition of BMES in our student community. We expect to grow the presence of Biomedical Engineering so that the community knows the relevance of our role in the health sector. We seek to provide the necessary tools to complement the training of a biomedical engineer, through talks, workshops, conferences, courses and interactions with other biomedical communities at the international level to promote student growth at the professional level. Finally, our expectation is to grow the impact that BMES has on the Tec community and in general by offering resources and useful material for the approach to Biomedical-related topics.

c. Supplemental materials



We're looking for you!

¿Quieres hacer campaña para ser presidente/vicepresidente de la BMES?

Manda un mensaje a @cpe
Dudas generales con:
Daniel Hernández: 878 135 0122
Rafael Abrego: 811528 3397

BMES
TEC DE MONTERREY

¡Felicidades

Bio-inonic

por ser la candidatura ganadora para la **BMES 2021!**

Comité de Participación Estudiantil
FETEC / MONTERREY