

# **Fall 2015 Newsletter**

VOLUME 13, ISSUE 1

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Alpha Eta Mu Beta International Biomedical Engineering Honor Society

#### MINDS Workshop:

The inaugural offering of the Mentoring for INnovative Design Solutions (MINDS) Workshop will be at BMES 2015. Apply to attend. See the MINDS article for more details.

## **News and Reminders**

- Annual reports are due. Report templates are available at: <a href="http://www.alphaetamubeta.org/documents.html">http://www.alphaetamubeta.org/documents.html</a>
- Annual awards to be given at BMES. Nominate your chapter and individuals from your chapter: <a href="http://www.alphaetamubeta.org/documents/nat\_awrds\_des.pdf">http://www.alphaetamubeta.org/documents/nat\_awrds\_des.pdf</a>
- ♦ Apply for travel awards to BMES: <a href="http://alphaetamubeta.org/">http://alphaetamubeta.org/</a>

I A M C D E T A

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## Logo from the new Identity Standards

## **Updates from the National Executive Committee**

- ♦ Activities at BMES 2015 in Tampa, FL
- ♦ MINDS workshop
- ♦ Letter from the President
- ♦ Identity Standards have been developed for AEMB
- Establishment of a Board of Directors

## **Other items**

- ♦ Videos for public use
- ♦ Featured student: Holly Gibbs
- ♦ Get to know our student officers
- ♦ ACHS certification (on Reminders page)

## Activities at BMES 2015 By Dr. Dominic Nathan

#### BME careers in industry, government and academia (joint AEMB - BMES session)

Date: Thursday, 8th October 2015

Location: Tampa Convention Center, Room 25

Start Time: 9:15am - 10:15am Session Chair: Justin Huckaby, BS

Summary: This is an open forum in which experts representing government, industry and academia will form a

panel to discuss career options in each field.

## **National Annual Grand Meeting**

Date: Thursday, 8th October 2015

Location: Tampa Convention Center, Room 25

**Start Time:** 4:00pm - 5:00pm

Session Chairs: Bhavit Vora, BS, Justin Huckaby, BS, Morgan Elliott, BS, David Wolfson, BS, Alicia Fernandez-Fernandez,

DPT,PhD, Marcia A. Pool, PhD, Teresa A. Murray, PhD, Dominic E. Nathan PhD

**Summary:** At this annual grand meeting, members representing chapters nationwide will come together to discuss important contemporary events relating to AEMB. (Attendance is mandatory for all AEMB members). If you would like to learn more about AEMB or start a new chapter at your school, please consider attending this session and speak to any of the national officers.

#### **Annual Reception - by invitation only**

**Date :** Thursday, 8th October 2015 **Location :** Embassy Suites, Tampa **Start Time :** 5:30pm - 7:00pm

Session Chairs: Bhavit Vora, BS, Justin Huckaby, BS, Morgan Elliott, BS, David Wolfson, BS, Alicia Fernandez-

Fernandez, DPT, PhD, Marcia A. Pool, PhD, Teresa A. Murray, PhD, Dominic E. Nathan PhD

**Summary :** The Annual AEMB reception will be held at The Embassy Suites Tampa Downtown Convention Center). We will be presenting the national awards and charters for new chapters during this session. Furthermore, this session is a networking opportunity to meet with other fellow members from AEMB chapters, representatives from industry and academia. This session is open to all AEMB student and faculty members, however tickets are required. For tickets, please contact aemb@alphaetamubeta.org Tickets are \$7 for AEMB student members, \$10 for AEMB faculty members, \$15 for non AEMB faculty members & alumni, \$20 for invited representatives and \$27 for all others.

#### **Annual AEMB Ethics Session**

Date: Friday, 9th October 2015

Location: Tampa Convention Center, Room 25

Start Time: 2:00pm - 2:45pm

Session Chairs: Robert D. Frisina, PhD, Bhavit Vora, BS

Title: Genomic Testing and personalized medicine, to what extent is knowing a good thing?

Summary: Today's biomedical engineers are advancing many technical areas of bioengineering at a very rapid pace. Impacts of recent and ongoing advances in tissue engineering and microelectronic fabrication are revolutionizing progress in the arenas of personalized medicine, especially with regards to molecular genetics and genomic testing. Technological progress in these areas have significantly improved quality of care and the efficacy of treatment. However, one of the professional conundrums in the area of genomic testing pertains to moral and ethical challenges,

especially with regards to newborns and children. The basic dilemma here focuses upon the decisions that parents have to make for their young children, since children cannot make the decision themselves, about how much genetic testing should be carried out, and what can or should be done with the results of that genetic testing. Genomic testing in children is becoming faster, more efficient and less expensive. So, now instead of testing for a few obvious genes for children who are born with birth defects, possible genetic syndromes, or easily diagnosed problems such as hearing loss or deafness, genetic screening immediately on the horizon will be able to screen for mutations in hundreds or thousands of genes routinely. So, for example, what if a newborn is discovered to have a gene that causes an age-related disorder such as Alzheimer's Disease? Should the parents be told? Should the child be told when they are old enough to know? What is the point of telling the family now, when there are still no preventative or curative treatments of Alzheimer's? Should it go in the child's medical record, where future employers, insurance companies or hackers can gain access to it? And you can imagine a number of biomedical scenarios where it is not obvious what to do with genetic information such as this. Another challenging issue is how to obtain the necessary blood samples from a newborn, which has a relatively small blood volume. Umbilical cord blood has been mentioned as a good source, since the umbilical cord is normally cut (sometimes by the proud Father) and discarded with the placenta. However, even this seemingly innocent, harmless procedure has now been called into question as some new evidence suggests that babies do better when the cord blood is allowed to flow into the baby for awhile, precluding a quick cutting of the cord, as has traditionally been done. So, as biomedical engineers work with nurses, doctors, insurance companies and other players in our healthcare system, these issues will come up without clear-cut answers available to them.

For more information on Dr. Robert Frisina and his research, please visit his official site



# Cultivate Your Innovative Mind: Apply for our MINDS Workshop Now By Dr. Alicia Fernandez and Dr. Teresa A. Murray

Your AEMB National Executive Council, which includes 4 student officers, is excited to tell you about our newest AEMB program, Mentoring for INnovative Design Solutions (MINDS) Workshop, that will help you develop skills that will support and take you beyond the traditional senior design project. MINDS kicks off with an hour and a half workshop at 9 am on October 9<sup>th</sup> at the Biomedical Engineering Society 2015 Annual Meeting in Tampa, FL and will continue online as a team project for 6 months. Team members may be from different universities. We have a limited number of spots that are available on a first come first served basis, so please apply as soon as possible.

The MINDS workshop will build engineering design skills including several that are not usually stressed in coursework projects, such as market considerations, technology transfer, regulatory strategy, and raising capital for funding product development. The workshop will utilize engineering professionals to guide students in translating their innovative ideas into medical devices and technologies that address an unmet need in the healthcare industry or that give access to improved healthcare to a wider number of people. Up to 20 student participants for this inaugural workshop will be selected. We are especially encouraging sophomores and juniors to participate. To apply, see our Call for Applications in this newsletter or ask your AEMB faculty advisor. It is not necessary that participants be members of AEMB. Participants will be assigned to teams of four students and one professional engineer. Each team will begin with a specific healthcare need and will consider 5 design criteria as they create a product to meet a need. Each team of students will continue to work on their project for up to six months after the workshop using collaborative tools such as Skype®

document sharing, and online utilities. This workshop will build skills in long distance collaboration, which is becoming an increasingly important ability. AEMB will provide additional resources via our web site to help participants and mentors more fully address the design criteria. After 6 months, teams will present their design online in the form of a video or a printed presentation.

As part of the application process, students will submit an idea for a new device or technology within a focus area and the potential impact of their innovation as part of their application for a travel award to participate in the workshop. This year's focus is on wearable electronics or telemetry technology. Applicant's statements will help us decide how to assign students to teams. These statements will also serve as a guide to help each mentor select a basic product idea for the team to use as a starting point for the workshop.

At the start of the workshop, a moderator will give a 10-minute overview and explain the timelines during and after the workshop, expected deliverables, and how to use pre-printed worksheets and our shared drive as a resource for their designs. This site will also be used to facilitate communication between students and mentors after the workshop. Following the introduction, the mentors will guide their students through refining their innovation. The mentor will spend 60 minutes with the students guiding the further development of the team's innovation. Throughout this process, the mentor will incorporate our 5 key design considerations into the discussions. These include (i) market considerations for commercialization, (ii) design development and testing, (iii) quality control, (iv) regulatory strategy, and (v) intellectual property protection. The team's design ideas and notes on key considerations will be recorded and uploaded to the team's collaboration site. In the last 15 minutes of the team meeting, each team will develop an elevator pitch (60-second, compelling description) for their product and adopt a plan for making future design refinements using the collaboration site.

After the workshop, students will meet virtually (e.g., via Skype) approximately every 2 weeks for up to 6 months to further refine their innovation. Mentors will be encouraged to follow and guide the student's progress. In addition to having designed a product, each team will be expected to refine the elevator pitch for their product. They will also be required to produce a more extensive presentation of their product, such as a video for a Kickstarter campaign, or a PowerPoint presentation for a group of potential investors. We will provide team members with expected elements for these presentations with guidance from our mentors. Notably, we will post opportunities for design contests, investment, and grant programs. These opportunities will help induce participants to not only complete the 6-month process, but to do it exceptionally well.

The major outcomes of this workshop is for students to have effective inter-institutional collaborative skills, and to understand our 5 key design considerations for the product design process. Participants will also be able to state the features, benefits and impacts of their products through production of a compelling pitch for their product. These skills should help them better compete for prizes and recognition in design contests.

While we have no travel awards specifically to attend the workshop, chapter officers that receive AEMB travel stipends are eligible to apply. Since it is an honor to get a seat at this workshop, you can ask your department to sponsor or subsidize your travel expenses. We will mention their sponsorship on our website. Again, AEMB membership is not required to participate. If you know a promising sophomore or junior that is not yet a member, please let them know about this opportunity.

We especially encourage MINDS participants to attend a workshop sponsored by BMES entitled Biomedical Engineering Technology for the Elimination of Health Disparities. It is on October 8<sup>th</sup>, the day before the workshop, from 2:00 – 4:00 pm. Please see the announcement in this newsletter or the BMES 2015 Annual Meeting website for more information on the disparities session.

We wish to thank the other members of the planning committee for their help in creating and organizing this event; they are Dr. Marcia Pool, Dr. Dominic Nathan, and Mr. Bhavit Vora.

For more information, please contact us at <a href="mailto:aemb@alphaetamubeta.org">aemb@alphaetamubeta.org</a>.

# New Session on Addressing Healthcare Disparities at BMES Annual Meeting by Dr. Teresa A. Murray

If you are going the BMES 2015 Annual Meeting, I want to encourage you to attend this BMES Session. If you are participating in our MINDS Workshop, which will focus on wearable and wireless technology, it would be a very good idea to attend this session. This will be a good way to get ideas and learn about unmet needs in the US and abroad.

Attending MINDS workshop? This session would be a great compliment to the MINDS

Dr. Gilda Barabino, who is co-chairing this session, would love to have feedback from you on the session. Please briefly describe in a few words or a couple of sentences (1) one thing that you did not know about healthcare disparities before attending the session and (2) the most important point for you as a biomedical engineer. Please send it to us at <a href="mailto:aemb@alphaetamubeta.org">aemb@alphaetamubeta.org</a> after the conference, or give me a note after the MINDS workshop. You do not need to include your name or school.

## Biomedical Engineering Technology for the Elimination of Health Disparities

Tampa Convention Center
Thursday, October 8, 2:00 – 4:00 pm
Chairs: Gilda Barabino, Cato Laurencin

This session will explore the role of biomedical engineering for use in addressing Health Disparities. The use of technologies for addressing musculoskeletal conditions such as arthritis and osteoporosis will be explored. New emerging technologies involving mobile health (mhealth) present possibilities for treatment of diabetes and hypertension. Finally, the session will address the use of biomedical technologies in developing countries, with an eye toward the adaptation of technologies to address issues here in the U.S. The 2015 BME Innovation and Career Development Travel Award winners will be announced at the session.

Speakers will include:

## Cato T. Laurencin, M.D., Ph.D.

Musculoskeletal Conditions: The Role of Biomedical Device Technology in Addressing Health Disparities

#### Roderick Pettigrew, M.D., Ph.D. & Linda Barry, M.D.

Diabetes and Hypertension: M Health Technologies for Prevention, Diagnosis and Treatment

#### Rebecca Richards-Kortum, Ph.D.

The Use of Biomedical Engineering Technology in Developing Countries: Addressing Health Disparities throughout the World and in the U.S.

(Session information copied from the BMES website)

## **President's Letter**

Hi AEMB members,

First, I want to thank you for your service in Alpha Eta Mu Beta. What you do at the chapter level is multiplied manifold as your legacy continues after your graduation. You will also take your commitment to excellence with you in everything that you do in your careers. You will lead, inspire, and help make this a better and healthier world. It is an honor to serve you and to help you in your professional development.

We have already honored you with a ceremony, pin, certificate, and honor cords. But as your honor society, we hope that we do not stop there. Our annual awards for outstanding chapters and individual service are our way of encouraging you to grow in your profession by contributing to activities at your chapter level. We also hold at least two AEMB -sponsored educational student sessions at the Biomedical Engineering Society Annual Meeting each year. Please attend one or more of these sessions if you attend this conference. I am very excited about our new MINDS Workshop. You can find more information on our activities elsewhere in this newsletter.

Second, I want to thank the students and professionals that serve with me on the AEMB National Executive Council. They are listed below this letter. As you can see from the list, we have 4 student officers and 3 nonstudent officers, which means that we are a student led organization. This is good news for you. We want your participation in our society and to hear your ideas. Please contact us at aemb@alphaetamubeta.org to share information on your chapter activities, your chapter and individual development needs, and if you wish to serve on committees or run for a national office. A list of the offices can be found on our website, www.alphaetamubeta.org.

Third, I want to thank our Board of Directors. Many of them have served selflessly for years with little or no recognition. The current members are listed on page 10 and 15 of this newsletter. Their wisdom and experience has helped us to grow steadily over the past 15 years. Their terms and duties are listed in our Constitution on our website. Perhaps, one day you will serve in this capacity.

Have a productive and successful year,

Dr. Teresa A. Murray

## **National Executive Council:**

National President
Teresa Murray, PhD
Louisiana Tech University

National Vice President
Dominic E. Nathan, PhD

National Treasurer
Alicia Fernandez Fernandez, PhD,
DPT.
Nova Southeastern University

National Student President
Bhavit Vora
Drexel University

National Student Vice President
Justin Huckaby
Louisiana Tech University

National Student Treasurer
Morgan Elliott
Saint Louis University

National Student Secretary
David Wolfson
Case Western Reserve University

## AEMB Identity Standards By Mr. Justin Huckaby, Ms. Morgan Elliott, and Dr. Teresa Murray

## How do you use our AEMB logo and name?

We recently developed a set of instructions on how to use our society's logo and name. We have also adopted a color scheme that will help easily distinguish us from other societies. Together the colors and the style of our logo and name will create a uniform representation of our society and make it easier for people to recognize us and our 40-plus chapters as being part of one organization. This name recognition is important for us and for you, a member of this society. It will readily identify you and your chapter as members of the premier honor society for biomedical engineers. Please take a moment to read through this section and if you have any questions feel free to send your questions to us at <a href="mailto:aemb@alphaetamubeta.org">aemb@alphaetamubeta.org</a>. These standards will be posted on our website soon. Also, please let your new officers know about these standards.

## Alpha Eta Mu Beta Identity Standards

#### **Society Name and Language**

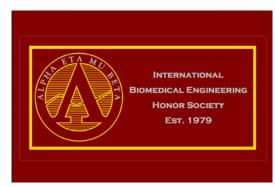
- 1. The name of the honor society shall be "Alpha Eta Mu Beta" and shall be spelled out in its entirety to refer to the society. The abbreviation "AEMB" can only be used following the first initial usage of the honor society name, "Alpha Eta Mu Beta". The words "Alpha Eta Mu Beta" are required elements on the organization logo and cannot be removed or abbreviated.
- 2. Alpha Eta Mu Beta shall be known as the "International Biomedical Engineering Honor Society". "National" and "Bioengineering" are not to be used in regards to Alpha Eta Mu Beta or the Alpha Eta Mu Beta logo.
- 3. A school's chapter name may be included as a sub logo element with the official logo. The proper fonts must be used as established in the "Official Fonts and Colors" section.
- 4. The establishment year of the society (1979) may be included as a sub logo element with the official logo. The proper fonts must be used as established in the "Official Fonts and Colors" section.
- 5. All wording referring to the honor society and on the logo must be spelled correctly and be legible. Refer to the "Official Fonts and Colors" section for acceptable font styles.

#### Official Fonts and Colors

- 1. A specific font is not required, but fonts such as Copperplate, Times New Roman, Arial, and Calibri are recommended in the design or use of the Alpha Eta Mu Beta name.
- 2. Only four font colors shall be allowed in the design or use of the Alpha Eta Mu Beta logo and banners. These colors are red (R130, G0, B0), gold (R255, G215, B0), black (R0, G0, B0), and white (R255, G255, B255).
- 3. The official colors for Alpha Eta Mu Beta shall be red (R130, G0, B0) and gold (R255, G215, B0).







Identity Standards usage directions continued on next page

## Official Logo

We strongly urge chapters to use either the black and white logo or the red and gold logo that is provided on our web site. For low resolution, simply cut and paste the logos in this document into your flyers and newsletters. If you need high resolution for large posters, banners, and t-shirts, then please download the desired logo in TIF or JPEG formats.

If you wish to recreate our logo, please follow the directions below:

- The official logo shall consist of the words "Alpha Eta Mu Beta", a circle with outer and inner boundaries, and a capital "A" as it appears in the logo graphics section.
- The words "Alpha Eta Mu Beta" must be located within the circle's boundaries and across the top half of the circle on the logo. This font should be Copperplate.
- The cursive, capital "A" must be located within the circle's inner boundary and centered.
- These relative placements for the logo's components shall not be altered or adjusted. These three logo components shall not be removed under any circumstances.
- The logo's orientation must remain the same and not be altered.
- The logo's size may be altered only if the aspect ratio has been locked to avoid stretching the circle into an oval shape.

These Alpha Eta Mu Beta graphics may be downloaded from our web site at <a href="www.alphaetamubeta.org">www.alphaetamubeta.org</a> and used by chapters and members of the society. These graphics are held to the Alpha Eta Mu Beta identity standards.

#### Usage

- The name "Alpha Eta Mu Beta" and the society logo shall only be used by members and advisers of the society to promote the organization in a wholesome manner.
- Some acceptable uses of the name and logo include academic settings and community service or volunteer settings as well as the national conference.
- The name and logo of Alpha Eta Mu Beta may be promoted on T-shirts, banners, pens, and other merchandise under the discretion of members and chapter advisers of the society.



# Video Collection to Spark Discussions Related to Biomedical Research and Engineering

By Dr. Teresa A. Murray

Are you looking for an interesting and educational discussion topic for a meeting or a classroom discussion? We have produced several videos of selected conference sessions that we have sponsored or cosponsored. Their content can spark lively group discussions. You can view them for free on YouTube. Their run times range from 10-52 minutes. Please let us know how you used them. We received a grant from the National Science Foundation to produce these, in addition to funding travel grants for chapter officers. Your feedback on any of these videos will help us compete more successfully for another grant.

Descriptions of our videos are, as follows:

1. "Is My Mind Mine?, Neuroscience, Privacy and the Self," is presented by the highly regarded author and speaker, Paul Root Wolpe, PhD. Dr. Wolpe addresses how advances in technology, particularly in brain imaging, have presented numerous ethical issues (<a href="https://youtu.be/qkHNwXjwA4k">https://youtu.be/qkHNwXjwA4k</a>, run time 52.21 min.).

- 2. "How to Communicate With Your Congressman." AEMB Public Policy Session, panelist Jared McKinley's presentation at AEMB Public Policy Session (<a href="https://youtu.be/cPC3ptvy5">https://youtu.be/cPC3ptvy5</a> 4, run time 10.15 min.).
- 3. In the Health Disparities video series (3 videos), a panel of experts discuss the inequities experienced in healthcare by African Americans in the United States, the resulting distrust of the medical establishment, and some ways that we can ensure that all people will have effective healthcare in the future.
- 4. Panelist Dr. Gilda Barabino, who is a biomedical engineer, presents several issues and challenges for our profession (https://youtu.be/pKosPkFRap8, run time 15.29 min.).
- 5. Dr. Rafael Lee proposes that personalized medicine will ensure that all people will have effective healthcare and that biomedical engineers will have important roles in developing this new approach to medicine (<a href="http://youtu.be/AaqGUgkmq0I">http://youtu.be/AaqGUgkmq0I</a>, run time 15.09 min.).
- 6. Attorney Fred Gray provides a rich historical perspective through his decades of experience advocating for African Americans in the fight for civil rights and through representing several of the survivors of the infamous Tuskegee Syphilis Study (https://youtu.be/dEjxZNHgL1s, run time 23.29 min.).

These sessions at the 2012 Annual Meeting of the Biomedical Engineering Society in Atlanta, GA were sponsored in whole or in part by Alpha Eta Mu Beta. These videos were produced with generous support from the National Science Foundation (CBET Conference Grant 1261495.) Student groups and educators may use these videos and the discussion guide free of charge.



Need professional development options for your members?

Check out these videos!

# **AEMB Board of Directors Replaces Advisory Board** *By Dr. Teresa A. Murray*

Last year we replaced our Advisory Board with a Board of Directors. This change was driven in part by the recovery of our tax exempt status. Being a tax exempt society makes it easier to solicit funding from individuals, foundations, and other groups. To be competitive for these funding sources we need to have governance by a legal governing entity, such as our newly created Board of Directors.

Our new governance is described in Article IV, Sections 1-2 of our Constitution. A copy is posted on our website. Section 2 provides for 6 elected members of the Board of Directors (Board) with two being replaced every two years. This staggered replacement ensures that AEMB has continuity of oversight from our Board.

To facilitate staggered elections in the future, our first elected Board members were elected in 2014 for 6-, 4-, and 2-year terms. Jerry C. Collins, Ph.D., Alabama A&M University and Lipscomb University, and Walter Lee Murfee, Ph.D., Tulane University are serving 6 year terms (2014 – 2020). Jeffrey LaMack, Ph.D., Milwaukee School of Engineering and Ken Webb, Ph.D., Clemson University are serving for 4 years (2014 – 2018). Bryant Hollins, Ph.D., Louisiana Tech University and Dean C. Jeutter, Ph.D., Marquette University are serving 2 year terms (2014 – 2016).

Past National Presidents also serve on the Board of Directors for a period of 6 years. These include Anthony J. McGoron, Ph.D., Florida International University (2014 – 2020) and Brent Vernon, Ph.D., Arizona State University (2010 – 2016). The term of our previous past National President Herbert F. Voigt, Ph.D., Boston University has expired (2008 – 2014). Our past National Student Presidents serve a two-year term on the Board. Rupak Dua, Ph.D., Florida International University (2014 – 2016) will be replaced by Bhavit Vora, B.S., Drexel University (2016 – 2018).

With our new governance, we are now poised for soliciting funding from philanthropists and charitable organizations. Our student Treasurer, Mr. David Wolfson has begun talking to retail organizations that give money to student groups. If you know of any such programs, please contact us at <a href="mailto:aemb@alphaetamubeta.org">aemb@alphaetamubeta.org</a>.

## A firsthand account of our revival and growth By Dr. Teresa A. Murray

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How did Alpha Eta Mu Beta come into existence? You can read about when and where we began as an honor society on our web site. Since then, we have had our challenges as an organization. Even through some difficult times, we grew in numbers and in our service activities. How did we grow from a handful of chapters with no national meeting in 1999 to the leading honor society for biomedical engineers and why am I so pleased about this? I was inducted into AEMB in 2000 and have witnessed this growth firsthand. This column contains my firsthand account of some of our more recent history. It shows some of our challenges and how we grew.

My national involvement in AEMB started as an undergraduate when I volunteered to chair a fundraising committee in 2001. When I was appointed, we were struggling with poor name recognition, numerous inactive chapters, the loss of our non-profit status, and inadequate revenues. Ms. Pat Horner, the Executive Director of the Biomedical Engineering Society at that time, and Dr. Herb Voigt, our AEMB President, helped us form an alliance between the two organizations that saved our society and gave us a meeting room for our annual meeting events at the BMES Annual Meeting. Even though we have regained our independence and nonprofit status, we still hold our AEMB Annual Conference during the BMES Annual Meetings. In 2002, I became the National Student President. I served for two terms

as President with a term as Student Vice President in between. As part of our strategy to increase name recognition and to provide value to our members we began our annual AEMB Student Ethics Session at the Biomedical Engineering Society Annual Meeting in Baltimore, MD. With guidance from Dr. Jerry Collins, the chair of the BMES Ethics Committee, I organized the first few annual sessions. We also instituted an annual banquet during our conference with assistance from Dr. Herb Voigt. After completing graduate school, I became a member of the AEMB Advisory Board for several years. During this time I helped establish a series of public policy sessions at BMES that were targeted toward students and postdocs. After the death of Pat Horner, we hired an interim, part time Director, Ms. Charla Triplett. She was eventually replaced by our current Executive Director, Dr. Marcia Pool. Marcia was an AEMB member from our founding chapter at Louisiana Tech University. She has been instrumental in our growth both from an administrative role and from the perspective of an AEMB member who wants to help our society provide more value to our members.

Coordination of our Annual Ethics Sessions and Banquet were taken over by Dominic Nathan, who was elected as the Vice President in 2009. His first task was to revamp our AEMB website; he still manages our website. He has since earned a PhD in Biomedical Engineering. When Ms. Horner passed away in 2009 he assumed the responsibility of managing our entire Annual Convention. Please read his column in this newsletter on this year's conference activities or read about it on our website. Dr. Nathan is also our best ambassador. He has visited numerous universities with AEMB chapters and those without them to discuss establishing a chapter. He also instituted our AEMB Reception which replaced our banquet. This is a relaxing time for members to meet informally with other chapter members and advisors and the occasional industry representative. Dr. Nathan will be handing out chapter awards during this time in Tampa.

I have seen our organization grow from a handful of active chapters to over 40 this year. We have also grown from a society that mostly honored exceptional students to one who helps develop their skills and broaden their impact in our society.

Of course there were numerous others who have helped us become a strong and growing society. It is my hope that we will be able to reconstruct our membership and officer lists (most of this information was lost after Ms. Horner's passing). It would be wonderful to recognize our past members and officers on our website. So, we are working on that.

All of our current National Executive Council members are very active in projects to provide professional development opportunities for you. They are listed in our National Officers section in this newsletter and on our web site. They have novel and exciting ideas, as well as the keen ability to implement them. When I look at the annual chapter reports, I see the same innovation and impact in service and development activities in your schools and communities. Please ensure that we continue to receive your school's annual chapter reports.

As your new President, I cannot fully express how honored I am to serve the organization that nurtured me as a student leader and postdoc for over 12 years. I have seen our organization grow from a handful of active chapters to over 40 this year. We have also grown from a society that mostly honored exceptional students to one that helps develop their skills and broaden their impact in our society. You are writing the next chapter in our history. I can hardly wait to see what we will do in the years to come.

## Featured Member—Holly Gibbs

Holly Gibbs has a B.S. and Ph.D. in Biomedical Engineering from Texas A&M University (TAMU) and a M.S. in Genomics and Pathways Biology from University of Edinburgh.

She joined AEMB in 2008 and immediately became actively involved in chapter activities. In her first year, she volunteered to coordinate a panel discussion on interdisciplinary research in Biomedical Engineering and was voted our chapter's "New Member of the Year". Following this successful panel, Holly developed and coordinated a new panel on different post graduate career paths. Due to Holly's active involve and leadership skills, she was elected to Vice President of the TAMU chapter and coordinated incoming members; then, in 2011-2012, Holly was elected and served as chapter President. Holly's goal as president was to focus on giving biomedical engineers a presence in the community of service at Texas A&M University. Two events the chapter organized around Holly's goal were participating in a food drive and volunteering for the TAMU "Big Event".

In addition to her academic and professional accomplishments, Holy is also a mother and seeks to promote a family friendly environment in academia.

Holly, congratulations on all your accomplishments!





Congratulations to all the 2014-2015 graduates!
We look forward to seeing and hearing of all your continued accomplishments. Best wishes to you in all you do!

**Photo courtesy of Morgan Elliott** 

## Get to know the Student Officers!

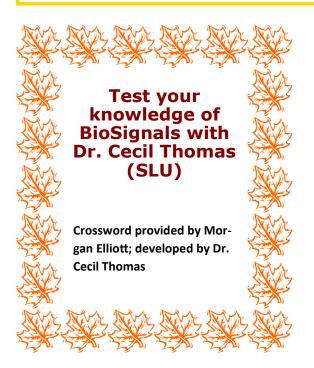
National Student President: Bhavit Vora graduated with distinction from Drexel University in June 2015 where he earned his Bachelor of Science in Biomedical Engineering, Master of Science in Biomedical Engineering and Master of Science in Engineering Management. At Drexel University, Bhavit served as the President of Alpha Eta Mu Beta and led a week-long exhibition of healthcare innovation and Biomedical Engineering named Healthcare Innovation Week at Drexel University. Bhavit was also an active member of Phi Sigma Pi, Drexel Club Volleyball and the Peer Mentoring Program for Biomedical Engineering. Bhavit's focus at Drexel University was related to biomechanics and human performance and his senior project dealt with an innovative method to detect perioperative laryngospasms using retrograde light. Currently, Bhavit has joined Johnson & Johnson's GOLD (Global Operations Leadership Development Program) and works in the Process Excellence team. Prior to joining the GOLD program, Bhavit completed three cooperative work experiences in the Medical Device and Pharmaceutical industries, namely DepuySynthes, McNeil Consumer Healthcare and GlaxoSmithKline. However, Bhavit remains passionate about AEMB and Biomedical engineering and hopes to remain an active part of the community throughout his career.

National Student Vice-President: Justin Huckaby recently graduated in spring 2015 with his Bachelors of Science in Biomedical Engineering from Louisiana Tech University in Ruston, Louisiana. As a student at Louisiana Tech, Justin participated in undergraduate research projects and served as an officer in both Alpha Eta Mu Beta and BMES. His favorite courses were biomaterials, mass transport, and biochemistry, and his primary areas of interest in biomedical engineering relate to drug delivery and biomaterials for diagnosing and treating cancer and other diseases. Following his undergraduate studies at Louisiana Tech, Justin will be attending graduate school and working towards his PhD in biomedical engineering from the Joint Department of Biomedical Engineering at the University of North Carolina at Chapel Hill and North Carolina State University. His area of research will pertain to pharmacoengineering. After obtaining his PhD, Justin wants to pursue a career in R&D for a pharmaceutical company. Outside of school and work, Justin enjoys CrossFit and other physical fitness activities such as running and swimming. He can even walk on his hands and has performed this feat once in class. Justin currently serves as the National Student Vice President of Alpha Eta Mu Beta and wants to see areas of industry relationships and chapter development grow for the organization. He is working with other officers to strengthen industry relationships and boost the number of nationally recognized Alpha Eta Mu Beta chapters across the country.

National Student Treasurer: Morgan Elliott received an Honors Bachelor of Science in Biomedical Engineering at Saint Louis University (SLU), where she served as the AEMB chapter vice-president for a year and president of the Disability Services Club for four years. While at SLU, she worked in the School of Medicine Transplant Division Lab to tissue engineer a thymus to help transplant patients by developing a device to recondition recipients' immune systems to accept a donor organ, for which she received the Barry Goldwater Scholarship. During Summer 2014, she was chosen to participate in the Minority University Research and Education Programs as an intern at the Cardiovascular Lab at NASA Johnson Space Center. She focused on analyzing arterial mechanics of the anterior tibial, brachial, and carotid artery walls during head-down-tilt bed rest, a ground based simulation of spaceflight. After another summer at NASA, Morgan will be pursuing a doctoral degree at Johns Hopkins University in Biomedical Engineering with a focus on Tissue Engineering. Ultimately, she wants to create tissue engineering products to benefit patient populations faced with debilitating diseases. Outside of school, Morgan enjoys doing small projects using MIG and TIG welding. As the National Student Treasurer, she is focusing on encouraging more universities to found AEMB chapters and increase corporate sponsorship of AEMB activities.

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National Student Secretary: David Wolfson graduated from Case Western Reserve University (CWRU) in 2015 with a Bachelor of Science degree in Biomedical and Chemical Engineering. At CWRU, he served as an active member in AEMB, BMES, and the Undergraduate Representative of Society for Biomaterials. After graduation, David will be pursuing a Ph.D. at the joint Georgia Tech-Emory University BME program. As an undergraduate, David worked on a variety of biomaterials projects in drug delivery and tissue engineering. He worked closely with Professor Eben Alsberg in CWRU's Department of Biomedical Engineering for last 2.5 years, developing a novel platform growth factor delivery system for a variety of tissue engineering applications, such as bone regeneration. With this work, David received the 2014 National Center for Stem Cell and Regenerative Medicine Undergraduate Fellowship to further this research. This summer, David worked with the Cleveland Clinic in their Innovations Department, commercializing various medical inventions. As the National Student Secretary, David is working on developing AEMB's new career development focus, such as the National AEMB resume book and career building instructional videos.



8. Butterworth

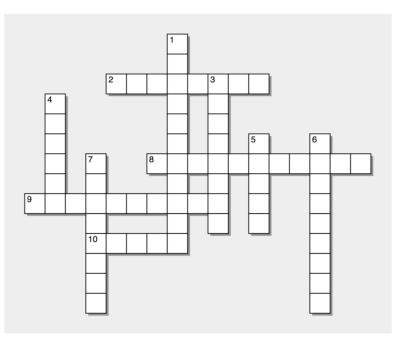
9. Derivative

10. Seven

**Answers:** 

2. Transfer

Across:



7. Aliasing

Across	coefficients = 7, and all denominator	4. FIR means impulse
2. The function is the Laplace	coefficients = 1. The dc gain is	response.
Transform of the impulse response.	Down	5. The derivative of the phase spectrum
8. A second-order tilter with sampling	1. he of [1,1,1] and [0,1,0] is	is the delay.
factor of 1/sqrt(2) is a filter.	[1,1,1].	6. The sinusoidal transfer function is
9. The impulse response h(t) is the	3. When the sampling rate is 32, a	also called the response.
of the step response.	cosine with frequency = 18 will appear	7 occurs when the sampling
10. A second-order digital filter has a	to be a cosine with frequency =	rate is too low.
transfer function with all numerator	·	

4. Finite

5. Group

6. Frequency

Down

1. Convolution

3. Fourteen

#### Alpha Eta Mu Beta

International Biomedical Engineering Honor Society

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Apply for chapter and member awards: <a href="http://www.alphaetamubeta.org/news.html">http://www.alphaetamubeta.org/news.html</a>

Apply for travel awards

Apply for the MINDS workshop

Mentoring and networking opportunities:

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