

# **BMES Chapter Development Report**

01 Jun 2015 – 31 May 2016

## **Virginia Tech-Wake Forest University BMES Student Chapter Chapter 102**

### **Virginia Tech Campus**

VT-WFU SBES  
Attn: Dr. Scott Verbridge  
345 ICTAS, Stanger Street (0298)  
Virginia Polytechnic Institute and State University  
Blacksburg, VA 24061

### **Wake Forest University Campus**

VT-WFU SBES  
Attn: Dr. Ashley Weaver  
575 N. Patterson Avenue, Suite 120  
Biotech Place  
Winston-Salem, NC 27157-1022

### **Corresponding Author**

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### **Executive Summary**

The Virginia Tech-Wake Forest University School of Biomedical Engineering & Sciences (VT-WFU SBES) is a joint graduate program formed in 2003 to bring together three prestigious academic institutions: the College of Engineering at Virginia Tech, the Wake Forest University School of Medicine, and the Virginia-Maryland Regional College of Veterinary Medicine. Each university contributes diverse educational and research opportunities to students, providing a unique graduate experience.

The VT-WFU Biomedical Engineering Society (BMES) organization is a BMES chapter that was founded to help bridge the gap between the two campuses and foster communication and collaboration among various research groups. Our mission is to encourage the development, dissemination, integration, and utilization of knowledge in biomedical engineering, as well as enhance interaction within the scientific community. Our chapter offers unique ways for students to become involved in outreach projects, research collaborations, and social events with other biomedical engineering students, faculty, staff, and industry. We are involved in many service and outreach projects within the local community, and we participate annually at the BMES National Meeting.



Department of Biomedical  
Engineering and Mechanics

Dear BMES:

The VT-WFU Biomedical Engineering Society (BMES) organization is a BMES chapter founded to help bridge the gap between the two campuses and foster communication and collaboration between various research groups. In this past year, we have continued to nurture this relationship. We started off the year with a series of social and outreach events to bring together new members of the society and ended with our 15<sup>th</sup> Annual Student Symposium.

The symposium is our largest hosted event and requires year-round planning. This past year's symposium showcased great research from both campuses! Our students have established strong connections with companies in the past, which has led to continued sponsorship throughout the years. With a presenter sponsor, three sustaining sponsors, and two contributing sponsors, we were able to double the award money given to our student presenters and truly reward great research. While the symposium is primarily of end-of-year event to disseminate research and encourage interaction among students, faculty, and professional attendees, we also held company interviews and software training to really offer the most to our students. We will continue to branch out and look for new funding sources at BMES Minneapolis this year.

We have continued our strong record of outreach and mentoring programs this year. We embarked upon several new events this year, including summer camps (C-Tech<sup>2</sup> and Imagination Camp at Virginia Tech) and HeartChase, a fundraising social event for the American Heart Association. We demonstrated the importance of science and engineering to local students at Kids' Tech University with a multi-faceted booth featuring injury prevention research as well as DNA extraction techniques.

While we performed many outreach events at both campuses, we have lacked in promoting interaction between students at the different campuses. Due to distance between Virginia Tech and Wake Forest, we need to create a social event in the fall that we renew on a yearly basis and students can plan ahead for. Expounding on our previous year's goal of undergraduate involvement at Virginia Tech, we plan to continue our mentoring program as interest in BME increases. We also want to provide any aid to the transition of starting the first class of Biomedical Engineering undergraduate degree students at VT. Also, we plan to update our website more often so students can see upcoming events, which will increase involvement.

Sincerely,

VT-WFU BMES Executive Board

Brad Hubbard  
VT BMES President

Harleigh Warner  
WFU BMES President

Scott Verbridge, PhD  
VT BMES Faculty Advisor

Ashley Weaver, PhD  
WFU BMES Faculty Advisor

The signature below indicates endorsement of this chapter development report by the faculty advisor, Dr. Ashley Weaver.

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## I. Administration Report

The executive committee consists of one President, one Vice President, one Treasurer, and one Secretary from each campus. An Undergraduate Representative may be appointed at each campus. The Faculty Advisor on each campus shall be appointed by the School of Biomedical Engineering and Sciences department head.

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### IA. Officers

#### **Presidents**

**Brad Hubbard** wbh@vt.edu **Harleigh Warner** hwarner@wakehealth.edu

The Presidents, as Chief Executives of the organization, shall supervise the organization's affairs and activities. The Presidents are the executive administrative, presiding and reporting officers. The Presidents shall be responsible for public relations, publicity, and promotion of the organization's activities. The Presidents will appoint a representative to the Students' Engineering Council and Graduate Student Council and will work with the Faculty Advisor and Society national office in all council and Society matters. The Presidents will chair the SBES Symposium Committee.

#### **Vice Presidents**

**Jackey Chen** rjchen@vt.edu **Jeff Suhey** jsuhey@wakehealth.edu

The Vice Presidents, who shall preside at meetings in the absence of the President for that campus, shall also supervise membership promotion. The Vice Presidents' primary responsibility will be program planning and execution.

#### **Secretaries**

**Nora Hlavac** nhlavac@vt.edu **Kelli Simms** ksimmms@wakehealth.edu

The Secretaries shall be responsible for posting notices of all regular and special meetings and shall keep a permanent record (minutes) of such meetings. The Secretaries shall be responsible for maintaining a current roster of members and for timely communications with the Society national office. The Secretaries will be responsible for maintaining a continuous Post Office Box address (or other permanent chapter address) and checking it frequently for correspondence.

#### **Treasurers**

**Marc Thompson** marct@vt.edu **Jamie Gaewsky** jgaewsky@wakehealth.edu

The Treasurers shall be responsible for the financial records of the organization, for the disbursement of funds at the discretion of the Treasurer. Past and proposed expenditures shall be reported at each executive meeting, and one of the Treasurers will give a budget overview report during at least every other general membership meeting. Income will be received through income producing functions approved by the membership and Faculty Advisor. The Treasurers are authorized to pursue funding proposals, especially involving funding the SBES Symposium and for applying for travel awards.

#### **Webmasters**

**Albert Kwansa** alkwansa@vt.edu **Harleigh Warner** hwarner@wakehealth.edu

#### **Faculty Advisors**

**Scott Verbridge, PhD** sverb@vt.edu **Ashely Weaver, PhD** asweaver@wakehealth.edu

**IB. Membership**

Local Members	National Members
92	67

**IC. Executive and General Body Meetings**

Executive Meetings		General Body Meetings	
Date	Attendance	Date	Attendance
17 Sept 2015	5 Exec Members at VT (1 previous; 4 current)	28 Aug 2015	22 SBES graduate students
24 Sept 2015	8 Exec Members (4 VT; 4 WFU)		
3 Nov 2015	7 Exec Members (4 VT; 3 WFU)		
14 Jan 2016	7 Exec Members (4 VT; 3 WFU)		
3 March 2016	7 Exec Members (4 VT; 3 WFU)		
21 April 2016	4 Exec Members (3 VT; 1 WFU)		

**Example Meeting Agenda Topics/Highlights**

**Exec Board Meeting Minutes**

***1-14-16, 9:15 am—meeting on VT side***

Attendees: Brad, Marc, Nora, Jackey

1. Points for BMES conference- send out an email to ask who donated to food drive
2. Science fair in email—Blue Ridge
3. Heart Chase—rescheduled for April, point for signing up, point for fundraiser, 2-5 people per team
4. KTU— February 27<sup>th</sup>, ideas for demo, 3-D printing, non-Newtonian fluids
5. Relay for Life—April, discuss more later
6. Social ideas—spring football tailgate
7. Recruitment weekend—March 17<sup>th</sup> to 20<sup>th</sup>, meeting to sign people up for different time slots (early March)
8. Fundraising—Valentine’s mugs, Marc considering the cost effectiveness of this option
9. Mentorship—Jackey, trying to get undergrads to sign up for 2 or 3 mentors, update on interest in pairing up

***9:30 am—meeting with Wake Forest and VT***

Attendees: Brad, Marc, Nora, Jackey, Harleigh, Jamie, Jeff

1. Google drive was organized
2. Fundraiser ideas--T-shirt, backpacks, coasters, pad-folio
  - a. Eliminate coasters
  - b. Send out poll

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- c. Mugs—WF done selling, 20 left at VT, maybe send some down with first years on Clinical Rotations
3. Marc—make sure ledger is up to date, pizza party (VT), happy hour (WF)
4. Points for funding for BMES conference, recruitment weekend and symposium points,
5. Meeting with all members?
6. Symposium: ESM students can come if they want (maybe only count on a couple coming), Ashley contacting and following up with sponsors from BMES
  - a. Maybe make a scholar site to distribute to students (Wake will discuss logistics)
  - b. Abstracts go out in March to be reviewed in April
  - c. Room reservations are done
7. Recruitment weekend—start planning logistics

**To-do**

1. Brad: email to students—Heart Chase, science fair, KTU, ask who donated, email to KTU contact, talk to Dr. Verbridge about sponsors from BMES
2. Marc or Jamie: send out fundraising poll
3. Nora: make google sheet for points
4. Wake Forest: symposium logistics, recruitment logistics
5. All: BMES points (organize)

## II. Treasury Report

Below is our Balance Sheet that outlines our expenses and income for the year. We also obtained \$15,500 in donations from various companies and organizations, such as *Ethicon, Altair, BMES, Cook Medical, Medtronic, Wake Forest Innovations, and the National BMES*. Their donations supported the preparation and successful execution of the 15<sup>th</sup> annual SBES symposium, which was held at Virginia Tech this year. This year we have focused our fundraising efforts on selling merchandise from past years. We have held a survey to determine future products to sell next year. In the following year, we plan on expanding fundraising opportunities while maintaining current industry contacts for symposium donations.

### IIA. Balance Sheet

The financial statement and budget for our chapter from June 2015-May 2016 is included below.

DATE	VT or Wake	DESCRIPTION	AMT WITHDRAWN	AMT DEPOSITED	BALANCE
<b>6/1/2015</b>		<b>Balance</b>			<b>\$1,207.07</b>
6/1/2015	VT WF	SBES Symposium Awards	\$445.00		\$762.07
7/6/2015	VT	Summer Kids Camps	\$18.24		\$743.83
7/9/2015	VT	Qual Care Packages	\$35.44		\$708.39
7/15/2015	VT	Summer Kids Camps	\$17.17		\$691.22
7/16/2015	VT	Summer Kids Camps	\$47.85		\$643.37
7/16/2015	VT	Fundraiser Payments		\$8.00	\$651.37
7/20/2015	VT	Summer Kids Camps	\$6.86		\$644.51
9/23/2015	WF	Fundraiser Payments		\$8.00	\$652.51
9/28/2015	Wake	Happy Hour	\$31.12		\$621.39
10/22/2015	VT	SBES Tailgate	\$74.52		\$546.87
10/22/2015	VT	Fundraising		\$70.00	\$616.87
10/26/2015	VT	Food Lion	\$13.60		\$603.27
10/26/2015	VT	Panera	\$33.37		\$569.90
10/29/2015	VT	Fundraising		\$25.00	\$594.90
10/29/2015	Wake	Interest Meeting	\$21.75		\$573.15
11/6/2015	VT	VT Fundraising		\$15.00	\$588.15
11/9/2015	Wake	Fundraising		\$69.00	\$657.15
11/23/2015	VT	Fundraising		\$16.00	\$673.15
11/23/2015	VT	Pizza Reimbursement for Mentorship Meeting	\$84.01		\$589.14
12/8/2015	VT	SBES Symposium 2015 Check Reimbursement		\$445.00	\$1,034.14
12/11/2015	Wake	BMES Happy Hour	\$43.32		\$990.82
1/8/2016	VT	Dominos Food Drive Pizza Party	\$58.40		\$932.42
2/12/2016	Wake	Fundraising - Items from Past Years		\$70.00	\$1,002.42
2/12/2016	Wake	Student Run Event to Thank Beverly	\$47.59		\$954.83
2/26/2016	Wake	Fundraising - Items from Past Years		\$10.00	\$964.83
2/26/2016	Wake	Quarters For Student Recruitment Event	\$80.00		\$884.83
2/29/2016	Wake	Over Expenditure for Graduate Student Recruitment Event	\$207.25		\$677.58
3/7/2016	VT	Kid's Tech Reimbursement	\$71.82		\$605.76

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3/7/2016	VT	Fundraising		\$13.00	\$618.76
3/16/2016	VT	Percentage Lunch Fundraising Event		\$74.06	\$692.82
4/18/2016	VT	Bowling Night Reservation	\$18.16		\$674.66
4/22/2016	VT	VT Spring Game Tailgate	\$69.84		\$604.82
4/29/2016	VT	BMES Mentor-mentee Bowling Night	\$70.00		\$534.82
5/27/2016	Wake	Wake Forest Grad Student Recruitment Reimbursement		\$287.25	\$822.07

Additional revenue may occur with remaining funds after costs of our Annual Symposium are paid. These revenue/expense amounts are not included in the chapter assets summary.

### III. Chapter Activities

#### IIIA. Industry and Professional Development Activities

The Virginia Tech – Wake Forest University BMES chapter realizes the importance of preparing its members for future careers as industry workers and academic researchers. Each year, we host a Symposium that allows students to present their work to other SBES students and faculty, as well as advanced undergraduates who are interested in pursuing biomedical engineering. This gives each member the opportunity to present either a poster or a podium talk about their research. First-year students in the program often choose to present a poster, and the Symposium may be one of the first formal presentations for young researchers. Additionally, the Symposium is one of the events that brings both campuses together and enhances collaboration between researchers at both locations.

#### I. 15<sup>th</sup> Annual SBES Symposium

*The VT-WFU BMES chapter is responsible for hosting an annual School of Biomedical Engineering and Sciences Symposium to further promote the profession of biomedical engineering and encourage cooperation between the campuses. Students with a planned graduation date within the year are required to present in a podium session. The remaining students are required to present in a poster session. This year, we had over 90 oral and poster presentations given by our graduate and undergraduate students, including presentations from Tissue Engineering, Biomechanics, Cancer, and Neuroengineering. The 2016 SBES Symposium sponsors included Altair, BMES, Cook Medical, Ethicon, Medtronic, and Wake Forest Innovations. Sponsor representatives attended the symposium and were provided with exhibition tables to interact with students and faculty.*

Audience: SBES graduate students

<b>15<sup>th</sup> Annual SBES Symposium</b>	11 May 2016 8:00 am – 5:00 pm Biotech Place Winston-Salem, NC	150 Students, Faculty, and Undergraduates
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#### IIIB. Social Activities



Due to the unique dual-campus nature of our BMES chapter, we host a number of social events in order to encourage students from both campuses to meet. These events allow students to become acquainted with each other and provide a sense of community between the campuses.

### I. BMES Tailgates

*Students from the Virginia Tech campus gathered for the 7<sup>th</sup> annual BMES student tailgate for the VT vs. Duke football game. The Virginia Tech Hokies had a thrilling performance which extended into 4<sup>th</sup> Overtime! Food for grilling was sponsored by the Chapter.*

<b>BMES Tailgate</b>	24 October 2015 Blacksburg, VA	13 SBES graduate students
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### II. BMES Mentor-Mentee Socials

*The Virginia Tech BMES Mentorship program kicked off the semester with a pizza social to introduce the interested undergraduate students to the various research experience from the graduate students. The graduate students each presented a short 2 slide presentation about their professional and research experience. Pizza and soda was sponsored by the Chapter. The second Mentor-Mentee social event was a bowling social event sponsored by the Chapter. The graduate students met with the undergraduate mentees at an on-campus bowling alley to provide a relax environment to get to know each other and discuss personal and career goals.*

<b>BMES Pizza Social</b>	9 February 2016 Blacksburg, VA	20 SBES graduate students
<b>BMES Bowling Social</b>	29 April 2016 Blacksburg, VA	5 SBES graduate students

### III. BMES Happy Hour

*Students from WFU meet at various locations in Winston Salem, NC for an end of week get together. We eat appetizers and snacks sponsored by the Chapter. Because students often work at different locations depending on their research, this provides a great opportunity for students with different research focuses to meet and socialize.*

<b>BMES Happy Hour</b>	24 Sep 2015 Winston-Salem, NC	4 SBES graduate students
<b>BMES Happy Hour</b>	5 Nov 2015 Winston-Salem, NC	5 SBES graduate students

### IV. BMES Staff Appreciation Social

*Students from WFU organized a social to thank a staff member, Beverly Wright, who has been a great help to the chapter and department and were transitioning to a different role within the WFU.*

<b>BMES Staff Appreciation Social</b>	2 February 2016 Winston-Salem, NC	17 SBES graduate students
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### IIIC. Inter-chapter Activities

Currently, the Virginia Tech – Wake Forest University does not have any inter-chapter activities.

NA

### **III.D. Outreach Activities**

Our chapter understands that the future of engineering, science, and technology lies in inspiring future generations of engineers and scientists. Every year, BMES students volunteer their time at various events geared toward informing and inspiring k-12 students to pursue careers in biomedical engineering.

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#### **I. Summer Camps – C-Tech<sup>2</sup>**

*C-Tech<sup>2</sup> is an opportunity to learn about college life, targeting junior and senior high school girls. During this program, students are introduced to engineering through seminars and interaction with other prospective students. Students spend time involved in hands-on activities designed to increase their interest in and knowledge of applications of engineering to real world situations. This year was our first involvement and it was a great success! We demonstrated the biology side of biomedical engineering and how it can be utilized for different applications. The hands-on demonstration of DNA extraction from strawberries sparked interest and fun in the students. There were often many questions of biomedical engineering and how this technique pertained to our research.*

Audience: Junior and Senior High School Girls

<b>C-Tech<sup>2</sup></b>	29 June 2015 – 8 July 2015 Blacksburg, VA	7 SBES graduate students
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#### **II. Summer Camps - Imagination Camp at VT**

*Imagination camp is an partnership between Virginia Tech's College of Engineering and Roanoke City Schools. During this program, students are introduced to engineering, science, and technology through hands-on activities and interaction with scientists. It is best put through the sentence on their website, "We have engineers, scientists, and college students who are ready to help you explore the world of technology, engineering, and science--not by watching, but by DOING!" Students spend time involved in hands-on activities designed to increase their interest in and knowledge of engineering in real world situations. This year was our first involvement and it was a great success! We demonstrated the biology side of biomedical engineering and how it can be utilized for different applications. The hands-on demonstration of DNA extraction from strawberries sparked interest and fun in the students. There were often many questions of biomedical engineering and how this technique pertained to our research.*

Audience: Rising 7<sup>th</sup> and 8<sup>th</sup> graders

<b>Imagination Camp</b>	16 July 2015 – 23 July 2015 Blacksburg, VA	7 SBES graduate students
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### **III. Kids' Tech University**

*Kids' Tech University, (KTU; a collaboration between Virginia Bioinformatics Institute and Virginia 4-H, <http://kidstechuniversity.org>) is a program serving 9-12 year-old children within a four-hour radius of Virginia Tech. Local children and their parents will come to Virginia Tech to watch lectures by renowned research scientists and participate in hands-on activities. For example, some of the subjects under discussion will be health/biomedical engineering/nutrition/medicine. During the hands-on activity portion of KTU, children and their parents walk through the area in a career fair-style event where they can engage in activities presented by VT clubs, departments, professors and extension agents. One primary goal of KTU is to create the future workforce in science, technology, engineering, and mathematics (STEM) by sparking kids' interest in these fields. This year, BMES students demonstrated the importance of injury prevention through our injury biomechanics research. In addition, students were introduced to organ bioprinting as this coincided with the early seminar on 3-D printing! The students were also given a hands-on demo with DNA extraction from fruit.*

Audience: K-12 Students

<b>Kids' Tech University</b>	27 Feb 2016 Blacksburg, VA	8 SBES graduate students
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#### **IV. Blue Ridge Highlands Regional Science Fair Judging**

*At the Blue Ridge Highlands Regional Science Fair, young scientists present the results of their hard work in the fields of animal science, behavioral and social science, biochemistry and chemistry, cell and molecular biology, computer science, earth and planetary science, environmental management and science, engineering, mathematics, medicine and health, microbiology, physics and astronomy, and plant science. This stimulates an active interest in science and engineering in young students, provides an unparalleled experience in research and presentations, and exposes the public to the hard work these students are performing. We were involved in the judging aspect of the fair this year, specializing in the biomedical categories. We sponsored the first annual Biomedical Engineering Award through Virginia Tech as a way to inspire students to enter biomedical studies as well as award new innovative ideas.*

Audience: Young Scientists, 6th-12<sup>th</sup> High School Students

<b>Blue Ridge Science Fair Judging</b>	4-5 March 2016 Radford, VA	4 SBES graduate students
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#### **III.E. Mentoring Activities**

The Virginia Tech – Wake Forest University BMES chapter continues to engage in undergraduate student mentorship program throughout the 2015-2016 academic year. The mentorship program provides direct interaction between undergraduate students and graduate mentors. The goal of the program is to provide undergraduate students with exposure to research and graduate school life, as well as advice for professional and career development. In the 2015-2016 academic year, we continue to have great turn out from our graduate students. A total of 20 graduate students expressed interest as a mentor and provided valuable feedback to undergraduate students.

Audience: SBES graduate students and undergraduate mentees

<b>Meet and Greet Pizza Social</b>	9 February 2016 Blacksburg, VA	20 SBES graduate students 10 undergraduate students
<b>Round Table Discussion Dinner</b>	February 9, 2016 Blacksburg, VA	12 SBES graduate students 8 undergraduate students
<b>Mentor-Mentee Bowling</b>	29 April 2016 Blacksburg, VA	5 SBES graduate students 8 undergraduate students

**Graduate Recruit Weekend**

*Every year Virginia Tech and Wake Forest University invite potential graduate students to campus to meet with advisors and tour the school. Current students assist recruits in finding their way around campus, discuss their experiences in the program, and show the recruits around town. Our program takes pride in the number of graduate students who help each potential recruit feel welcome in BMES. This year, in addition to formal recruitment activities and interviews, our chapter helped with a number of other events. We sent out a survey to all prospective students asking them to select a few activities that interested them. Based on their responses, students were able to go on a campus tour, a hike, or having some free time between interviews.*

Audience: SBES graduate students and recruits

<b>Wake Forest Graduate Recruitment Weekend</b>	26 Feb 2016 Winston-Salem, NC	18 SBES graduate students
<b>Virginia Tech Graduate Recruitment Weekend</b>	17-20 Mar 2016 Blacksburg, VA	26 SBES graduate students

**IIIF. Other Initiatives and Activities**

The Virginia Tech – Wake Forest University BMES chapter also participates in various outreach events as opportunities arise. These events give students the opportunity to give back to the community by donating their time.

**I. The Big Event**

*“The Big Event at Virginia Tech is a student-run community service effort that has grown into the 2nd largest event of its kind in the nation. Every spring, thousands of students, faculty, and staff come together to complete hundreds of community service projects throughout Blacksburg, Christiansburg and the New River Valley. Projects are completed regardless of need or socioeconomic status; instead, it is The Big Event’s goal to simply say, “Thank you.” Seeded in our university’s motto of Ut Prosim (That I may serve) students and community members come together for a truly unparalleled experience. The Big Event: “One Big Day. One Big Thanks.” This year, BMES students assisted on one big project: helping a local family of four plant trees and mulch their back and front lawns. The day turned out to be chilly and snowy but all the students still came together to make a big difference in the community!*

Audience: SBES graduate students and Blacksburg residents

<b>The Big Event</b>	9 Apr 2016 Blacksburg, VA	5 SBES graduate students
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## II. HeartChase

*HeartChase is a national event that raises money for the American Heart Association, while also raising awareness of the need to exercise. BMES participated in the local HeartChase event at Virginia Tech, the first involvement for us. The BMES team consisted of 4 members but we will get more interest in the coming years!*

Audience: SBES graduate students

<b>HeartChase</b>	6 Apr 2016 Blacksburg, VA	4 SBES graduate students
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## III. Relay for Life

*Relay for Life is a national event that honors cancer victims and survivors, while raising money for cancer research and increasing awareness of cancer. BMES participated in the local Relay for Life event at Virginia Tech, which is one of the largest collegiate events in the world. The BMES relay team consisted of 5 members who collectively raised \$515 through various fundraising events and donations.*

Audience: SBES graduate students

<b>Relay for Life</b>	22 Apr 2016 Blacksburg, VA	5 SBES graduate students
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## IV. Thanksgiving Food Drive

*Virginia Tech SBES graduate students donated over 80 cans of food that were donated to the InterFaith Food Pantry in Blacksburg, VA, which provides monthly grocery food supplies to local families.*

Audience: SBES graduate students and faculty

<b>Thanksgiving Food Drive</b>	25 Nov 2015 Blacksburg, VA	SBES graduate students and faculty
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## IV. National BMES Meeting

The Virginia Tech – Wake Forest University SBES chapter is widely recognized at the BMES Annual Meetings by the number of students who attend this conference. Each year, the department sponsors every student that is accepted to present a poster or podium session at the national BMES meeting. Attendance at the BMES annual meeting allows students to experience the wide variety of biomedical research applications and future employers.

### IVA. Attendance

Name	BMES Number	Affiliation
Adwoa Baah-Dwomoh	1872	Virginia Tech

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Marc Thompson	2259	Virginia Tech
Stephanie Beeman	12540	Virginia Tech
Michele Waters	24682	Virginia Tech
Vanessa Alphonse	26554	Virginia Tech
Patrick Thayer	26811	Virginia Tech
Andrea Rolong	29265	Virginia Tech
Matt DeWitt	35655	Virginia Tech
Puja Sharma	35693	Virginia Tech
Chen Sun	40191	Virginia Tech
Hao Gong	40224	Virginia Tech
Brittany Balhouse	40272	Virginia Tech
Allison Pekkanen	40296	Virginia Tech
Tim O'Brien	40784	Virginia Tech
Brad Hubbard	2233482	Virginia Tech
Jackey Chen	2234015	Virginia Tech
Amara Greer-Short	2234100	Virginia Tech
Megan Cox	2234105	Virginia Tech
Ting Tan	2235327	Virginia Tech
Jill Ivey	2235722	Virginia Tech
Devon Albert	2236076	Virginia Tech
Katie Degen	2238214	Virginia Tech
Zach Bailey	2340737	Virginia Tech
Sharon George	2340778	Virginia Tech
Harshawardhan Deshpande	2340794	Virginia Tech
John Scanlon	2342090	Virginia Tech
Jade Montgomery	2342388	Virginia Tech
Alex Hyler	2345468	Virginia Tech
Abigail Tyson	2345709	Virginia Tech
Michael Entz	2345746	Virginia Tech
Peter Fino	2345802	Virginia Tech
Jaclyn Press	2345943	Virginia Tech
Bethany Rowson	2345998	Virginia Tech
Nora Hlavac	2348255	Virginia Tech
Eduardo Latouche	2348360	Virginia Tech
Eric Leaman	2348427	Virginia Tech
Sam McGhee	2348490	Virginia Tech
Priya Venkatraman	2348499	Virginia Tech
Eleanor Nave	2348503	Virginia Tech
Andrew Cohen	2348505	Virginia Tech
Taylor Donaghy	2348510	Virginia Tech
Ishan Goswami	40901	Virginia Tech
Jamelle Simmons	Not available	Virginia Tech
Mike Scimeca	Not available	Virginia Tech

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Megan Richards	Not available	Virginia Tech
Nick Offerjost	Not available	Virginia Tech
Kathryn Brown	Not available	Virginia Tech
Sarah Steinke	Not available	Virginia Tech
Caitlin Weaver	12640	Wake Forest
Jennifer Huling	37568	Wake Forest
Samantha Schoell	41889	Wake Forest
Matt Davis	41935	Wake Forest
Elie Zakhem	2234184	Wake Forest
Melissa Boswell	2234719	Wake Forest
Rui Liu (M)	2234943	Wake Forest
Naeim Bahrami	2237856	Wake Forest
Hesh Deverasetty	2237857	Wake Forest
James Gaewsky	2237858	Wake Forest
Logan Miller	2237862	Wake Forest
Calli Nguyen	2237864	Wake Forest
Fatemeh Mokhtari	2341356	Wake Forest
Osama Kazi Zahid	2342917	Wake Forest
Kevin Enck	2343122	Wake Forest
Jared Mitchell	2343127	Wake Forest
Mireille Kelley	2343128	Wake Forest
Greg Gillispie	2343131	Wake Forest
Berkan Guleyupoglu	2343133	Wake Forest
Derek Jones	2343134	Wake Forest
Fanny Wang	2343136	Wake Forest
C. Moawad	2346479	Wake Forest
Will Decker	2348052	Wake Forest
Divya Jain	Not available	Wake Forest
Michaela Dimoff	Not available	Wake Forest

**IVB. Participation****I. 2015 Tampa BMES Annual Meeting Presentations**

<b>Thursday, October 8, 2015</b>			
<i>Gap Junctional Coupling Modulates the Conduction Velocity-Ephaptic Coupling Relationship</i> <b>M. Entz II, S. George, M. Zeitz, J. Smyth, S. Poelzing.</b>	<b>Oral</b>	<i>Do Facemasks Affect Helmet Performance?</i> <b>S. Rowson, E. Terrell.</b>	<b>Poster</b>
<i>Quantifying Head Impact Exposure in Collegiate Women's Soccer</i> <b>J. Press, S. Rowson.</b>	<b>Oral</b>	<i>Quantification of Rib Fracture Timing During Frontal Sled Tests</i> <b>A. Kemper, S. Beeman, S. Duma.</b>	<b>Poster</b>
<i>Head Impact Exposure Of Youth Football Athletes Over Multiple Seasons</i> <b>M. Kelley, J. Urban, D. Jones, L. Miller, J. Stitzel.</b>	<b>Poster</b>	<i>A Finite Element Model of a 50th percentile Male for Simulating Pedestrian Accidents</i> <b>C. Untaroiu, W. Pak, J. Schap, S. Gayzik.</b>	<b>Poster</b>
<i>Effect of Geometric and Material Property Changes in the Thoracic Skeleton for an Older Occupant Finite Element Model</i> <b>S. Schoell, A. Weaver, J. Stitzel.</b>	<b>Poster</b>	<i>The Injury Implications of Evasive Braking prior to Straight Crossing Path Intersection Crashes</i> <b>J. Scanlon, K. Kusano, H. Gabler.</b>	<b>Poster</b>
<i>Development and Validation of an Atlas-Based Finite Element Model</i> <b>L. Miller, J. Urban, J. Stitzel.</b>	<b>Poster</b>	<i>Effect of Knee Bolsters and Knee Bolster Airbags on Occupant Injury Risk in Frontal Sled Tests</i> <b>D. Albert, S. Beeman, A. Kemper.</b>	<b>Poster</b>
<i>Development of the GHBMC 5th Percentile Female Finite Element Model</i> <b>M. Davis, B. Koya, F. Gayzik.</b>	<b>Poster</b>	<i>Human Volunteer Neck Forces and Moments During Low-Speed Frontal Sled Tests</i> <b>S. Beeman, A. Kemper, S. Duma.</b>	<b>Poster</b>
<i>Operational Consistency Of Medical Linear Accelerator Performance Parameters</i> <b>C. Nguyen, C. Able, A. Baydush, S. Isom, M. Munley.</b>	<b>Poster</b>	<i>Asymmetrical Injury Risk in Frontal Oblique Impact</i> <b>R. Chen, H. Gabler.</b>	<b>Poster</b>
<i>Design behind Improving Efficiency in Endotracheal Tube Changes</i> <b>J. Mitchell, P. Brown, M. Olympio.</b>	<b>Poster</b>	<i>Pelvic Response Of A Total Human Body Finite Element (FE) Model During Simulated Under Body Blast (UBB) Impacts</i> <b>C. Weaver, J. Stitzel.</b>	<b>Poster</b>
<i>The Application of BioHeat Perfusion Sensors To Quantify Pressure Ischemia Of Explanted Organs</i> <b>T. O'Brien, A. Roghanizad, J. Robertson, T. Diller.</b>	<b>Poster</b>	<i>Bony and Soft Tissue Injury Risk Sensitivity of Drivers in Simulated Motor Vehicle Crashes</i> <b>J. Gaewsky, A. Weaver, B. Koya, J. Stitzel.</b>	<b>Poster</b>
<i>Potential Role of Pro-oxidative Mechanism in Cellular Damages in Autism Mice</i> <b>M. Hwang, H. Cho, J. Simmons, Y. Lee.</b>	<b>Poster</b>	<i>A Biomechanical Comparison of Intrapelvic and Extrapelvic Fixation for Anterior Column with Posterior-hemitransverse Acetabular Fractures</i> <b>G. Gillispie, P. Brown, J. Stitzel, E. Carroll.</b>	<b>Poster</b>
<i>Impact Response Characteristics of the Hybrid III and NOCSAE Headforms</i> <b>B. Cobb, A. Zadnik, S. Rowson.</b>	<b>Poster</b>	<i>One Step Microfluidic Immunomagnetic Separation of Tumor Initiating Cells Based On Multiple Markers</i> <b>C. Sun, C. Lu.</b>	<b>Poster</b>
		<i>Enhanced Microfluidic Immunomagnetic Separation Based on Microfabricated Ferromagnetic Patterns</i> <b>C. Sun, R. Yu, H. Hassanisaber, S. Ma, C.</b>	<b>Poster</b>



<b>Lu.</b>	
<i>Comparing the Ability of Head Impact Sensors to Measure Head Kinematics</i> <b>A. Tyson, B. Cobb, S. Rowson, S. Duma.</b>	<b>Oral</b>
<i>Development of a Methodology for Assessing the Biomechanical Performance of Hockey Helmets</i> <b>B. Rowson, S. Rowson, S. Duma.</b>	<b>Oral</b>
<i>Collagen Orientation and Density Analysis: A Program for Quantification of Scar Tissue Metrics</i> <b>J. Montgomery, R. Gourdie.</b>	<b>Oral</b>
<i>The Insect Respiratory System: A Source of Bio-inspiration for Tissue Vascularization</i> <b>R. De Vita, M. Webster, J. Socha, P. Nardinocchi, L. Teresi.</b>	<b>Oral</b>
<i>Characterizing the Role of HIF-1 in Blast Neurotrauma: Link with the Blood-Brain Barrier Disruption</i> <b>B. Hubbard, M. Lashof-Sullivan, J. Eck, E. Lavik, P. VandeVord.</b>	<b>Oral</b>
<i>Eye and Face Response to Blast Overpressure: An Experimental Study Using a 3D-Printed Human Face</i> <b>V. Alphonse, A. Kemper, S. Duma.</b>	<b>Oral</b>
<i>Solid-state nanopores for DNA base modification detection and sequence selection</i> <b>A. Hall, O. Zahid, F. Wang</b>	<b>Oral</b>
<i>Imaging Optically Cleared Whole Tissues with Unprecedented Resolution of Cellular Anatomy and Macroscale Architecture.</i> <b>F. Marini, K. Cowdrick, C. Booth, K. Nelson, G. Christ.</b>	<b>Oral</b>
<i>Pore Size Impacts Cell-Cell Communication and Scar Contraction in 3D-Printed Polyurethane Scaffolds</i> <b>T. Ramchal, E. Lorden, Z. Wang, L. Bashirov, M. Ibrahim, E. Hammett, B. Klitzman, J. Yoo, H. Levinson, S. Lee, K. Leong</b>	<b>Poster</b>
<i>Detection of Specific Nucleic Acid Sequences in a Mixed Solution with Solid-State Nanopores</i> <b>F. Wang, O. Zahid, A. Hall.</b>	<b>Poster</b>
<i>A Solid-State Nanopore Assay For Investigating Single-Stranded Binding Protein Interactions With DNA</i> <b>O. Zahid, M. Marshall, J. Ruzicka, V.</b>	<b>Poster</b>

<b>Henrich, E. Taylor, A. Hall.</b>	
<i>Strategies to Overcome Tissue Hypoxia in Islet Encapsulation</i> <b>N. Neel, R. Krishnan, N. Corrales, S. Padayao, M. Alexander, J. McQuilling, E. Opara, J. Lakey</b>	<b>Poster</b>
<i>Genetic engineering of Interleukin-35-secreting mesenchymal stromal cells for therapeutic anti-inflammatory applications</i> <b>J. Brown, C. Rodman, C. Porada, G. Almeida-Porada, A. Mohs, E. Opara</b>	<b>Poster</b>
<i>The Effect of Pre-Crash Velocity Reduction on Occupant Response Using a Human Body Finite Element Model</i> <b>B. Guleyupoglu, M. Davis, N. Vavalle, J. Schap, K. Kusano, S. Gayzik.</b>	<b>Oral</b>
<i>Machine Learning Classification of Low and High Head Impact Exposure in Youth Football Using DTI</i> <b>F. Mokhtari, C. Lack, E. Davenport, J. Urban, C. Withlow, J. Stitzel, J. Maldjian</b>	<b>Oral</b>
<i>Implantation Of A Chitosan-Based Bioengineered Tubular Neuromuscular Tissue For Gut Lengthening</i> <b>E. Zakhem, M. Elbahrawy, K. Bitar.</b>	<b>Oral</b>
<i>Scatter Reduction And Correction For Multi-source Cardiac Computed Tomography</i> <b>H. GONG, G. CAO.</b>	<b>Oral</b>
<i>Biomechanical Analysis of Coaxial and Cortical Trajectory Pedicle Screws in Lumbar Spine Fusion Constructs</i> <b>P. Brown, G. Gillispie, J. Mitchell, J. West, J. Stitzel, W. Hsu.</b>	<b>Poster</b>

<b>Friday, October 9, 2015</b>	
<i>Personalized Medicine Approach to Improving Reconstructive Surgery Outcomes for Breast Cancer Survivors</i> <b>K. Degen, K. Moyer, R. Gourdie.</b>	<b>Oral</b>
<i>Sleep to Waking versus Waking to Exercise: Resting State Impact on Risk of Sudden Cardiac Death</i> <b>A. Greer-Short, S. Poelzing.</b>	<b>Poster</b>
<i>Localized Activation of Bacterial Quorum Sensing for Bacteria-based Drug Delivery Applications</i> <b>E. Leaman, B. Geuther, B. Behkam.</b>	<b>Poster</b>
<i>Inhibitory Effects of Trans-cinnamaldehyde in the Progression and Aggression of Breast Cancer Cells</i> <b>M. Thompson, E. Schmelz, P. Dillon, L. Bickford.</b>	<b>Poster</b>
<i>Irreversible Electroporation for Ovarian Cancer Therapy Can Target Resilient Tumor-Initiating Cells</i> <b>A. Rolong, E. Schmelz, R. Davalos.</b>	<b>Poster</b>
<i>Targeted Cellular Ablation Based On The Morphology Of Malignant Glioblastoma Cells</i> <b>J. Ivey, E. Latouche, M. Sano, J. Rossmeisl, R. Davalos, S. Verbridge.</b>	<b>Poster</b>
<i>Dexamethasone Drug Delivery System for the Sustained Treatment of Choroidal Neovascularization</i> <b>A. Hirani, R. Tzekov, Y. Lee, V. Sutariya, Y. Pathak.</b>	<b>Poster</b>
<i>Influence of Elastic Moduli of Sparse Aligned Fibers on Bone Marrow Stromal Cells for Ligament Tissue Engineering Applications</i> <b>P. Thayer, S. Verbridge, L. Dahlgren, S. Guelcher, A. Goldstein</b>	<b>Poster</b>
<i>Suspended and Aligned Fiber Networks for Studying Collective Migration and Gap Closure Dynamics</i> <b>P. Sharma, B. Behkam, A. Nain.</b>	<b>Poster</b>
<i>Creep Properties of Swine Uterosacral and Cardinal Ligaments</i> <b>T. Tan, N. Cholewa, S. Case, R. De Vita.</b>	<b>Poster</b>
<i>Nonlinear Viscoelasticity Of Ligaments Of The Pelvic Floor</i>	<b>Poster</b>

<b>A. Baah-Dwomoh, T. Tan, R. De Vita.</b>	
<i>Local Dynamic Stability in Single and Dual-Task Concussed Gait: Preliminary Results</i> <b>P. Fino, P. Brolinson, T. Lockhart.</b>	<b>Poster</b>
<i>Fiber-Enabled, 3D-Printed Cellular Micropatterning for Robust and Affordable Cellular Biomechanics Studies</i> <b>D. Wolozny, M. Anderson, W. Ruder.</b>	<b>Oral</b>
<i>Influence of Synergistic Topographical and Biomolecular Cues on the Differentiation of Mesenchymal Stem Cells in Sparse-Fiber Composites Toward a Ligament Phenotype</i> <b>P. Thayer, S. Verbridge, K. Edgar, T. Grove, A. Goldstein.</b>	<b>Oral</b>
<i>Influence of Synergistic Topographical and Biomolecular Cues on the Differentiation of Mesenchymal Stem Cells in Sparse-Fiber Composites Toward a Ligament Phenotype</i> <b>P. Thayer, S. Verbridge, K. Edgar, T. Grove, A. Goldstein.</b>	<b>Oral</b>
<i>Lower Back Biomechanics during Manual Material Handling Task; the Effects of Aging</i> <b>I. Shojaei, M. Vazirian, E. Croft, M. Nussbaum, B. Bazrgari.</b>	<b>Oral</b>
<i>Age-related Alterations in Trunk Intrinsic Stiffness</i> <b>M. Vazirian, I. Shojaei, R. Tromp, M. Nussbaum, B. Bazrgari.</b>	<b>Oral</b>
<i>P-Fr-41 The Effect of Fluid Shear Stress on Ovarian Cancer Cell Viability and Organization</i> <b>A. Hyler, R. Davalos, P. Roberts, M. Stremmer, E. Schmelz.</b>	<b>Oral</b>
<i>Computational Modeling Of Drug Delivery Across The Blood-Brain Barrier (BBB) For The Treatment Of Autism Spectrum Disorder (ASD)</i> <b>J. Simmons, L. Achenie, Y. Lee.</b>	<b>Poster</b>
<i>Keratin Biomaterials Modulate Primary Macrophage Polarization In-Vitro</i> <b>M. Waters, P. VandeVord, M. Van Dyke.</b>	<b>Poster</b>
<i>Electric Field Ablation Influences Anti-tumor Response in Triple Negative Breast Cancer Cells</i> <b>I. Goswami, A. Rolong, R. Morrison, S. Coutermarsh-Ott, I. Allen, R. Davalos, L. Bickford.</b>	<b>Poster</b>
<i>A 3D Stratified Colon Model for Colorectal</i>	<b>Poster</b>

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<i>Cancer Progression</i> <b>M. Devarasetty, A. Skardal, S. Soker</b>	
<i>A Metastasis-on-a-Chip System for Modeling Colon Carcinoma Metastasis In Vitro</i> <b>M. Devarasetty, A. Atala, S. Soker, A. Skardal.</b>	<b>Poster</b>
<i>A 3-D primary hepatocyte and tumor organoid platform for metastasis research and drug screening</i> <b>E. Wang, M. Devarasetty, S. Soker, A. Skardal.</b>	<b>Poster</b>
<i>Fabrication Of Biomimetic Vascular Scaffolds For 3D Tissue Constructs Using Vascular Corrosion Casts As A Template</i> <b>J. Huling, I. Ko, A. Atala, J. Yoo.</b>	<b>Poster</b>
<i>Diffusion Changes in Cerebellar White Matter Microstructure Related to Head Impact Exposure in a Season of High School Varsity Football</i> <b>D. Sharma, N. Bahrami, J. Stitzel, J. Urban, A. Powers, C. Whitlow, J. Maldjian.</b>	<b>Poster</b>

<i>CUDA Based Spectral CT Simulation</i> <b>R. Liu, H. Yu.</b>	<b>Poster</b>
<i>Classification of Resting State fMRI Network Pre- and Post-Season Connectivity in Youth Football</i> <b>F. Mokhtari, C. Lack, C. Withlow, J. Stitzel, J. Maldjian</b>	<b>Poster</b>
<i>Effect Of Alginate Microcapsule Stiffness On Encapsulated Ovarian Cell Viability Kevin Enck1,2</i> <b>K. Enck, J. McQuilling, S. Sivanandane, E. Opara</b>	<b>Poster</b>
<i>Effect of Head impacts on White Matter Fiber Tracts in Youth Football Effect of Head impacts on White Matter Fiber Tracts in Youth Football</i> <b>N. Bahrami, D. Sharma, C. Whitlow, E. Davenport, J. Urban, Y. Jung, G. Gioia, J. Stitzel, J. Maldjian.</b>	<b>Oral</b>

## V. Future Directions

The Virginia Tech – Wake Forest University BMES chapter has grown widely since its inception. The dual campus nature of our organization poses exciting new opportunities for our chapter to continue growing. We plan on meeting with other BMES student chapter booths and attending the student leadership meetings at the annual BMES conference to enhance our organization.

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### VA. New Goals and Directions

#### I. Undergraduate Student Membership

*As our chapter is comprised primarily of graduate students, we hope to continue incorporating undergraduate students into the chapter. We believe this will be mutually beneficial to undergraduate students, graduate students, and the department as a whole. This year was the third year of the mentoring program between undergraduate and graduate students of the Virginia Tech campus.*

*Wake Forest is developing an engineering program anticipated to start in Fall 2017. Our chapter aims to collaborate with the new department and develop a mentoring relationship. New initiatives for the next year will include meeting with the administration of the new department to ensure students have mentors as soon as they join the program.*

Audience: VT-WFU undergraduate students

#### II. Expand Outreach Programs into Education

*Our chapter strives to give back to our communities. We participate in a number of outreach events, but would like to expand these into more educational avenues. This has already been planned in the form of summer camp involvement at Virginia Tech. These summer camps are geared towards high school students interesting in engineering and provide additional ways for our chapter to spread biomedical engineering. These initiatives would expand on our current involvement in a number of outreach programs such as First Lego League, Kids' Tech University, and numerous science fairs.*

Audience: SBES graduate students

#### III. Fundraising

*This year we spent more money than we raised due to increases in activities and expenses put forth for the development of our mentor program and final symposium awards. In order to maintain a healthy sum of money in our account we will aim to replenish the money that we spend in the upcoming year. This will be done through various fundraising events including nights hosted at Buffalo Wild Wings, Moes and bake sales.*