



Fall 2010 Recommendations

A comprehensive report endorsed by the 2010-2011 Biomedical Engineering Undergraduate Advisory Board at The University of Texas at Austin.

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Table of Contents

Endorsement of Work.....	3
Introduction	4
External Relations	6
Bioscience and Biotechnology Symposium	6
Student Engineering Council Participation	7
Town Hall	8
Research	13
Biomedical Engineering Research Grant.....	13
Internship and REU Database	14
Academics.....	15
Design Competition	15
Track Night.....	20
Blog and Communications	20
Concluding Remarks	22
Appendix.....	23

Endorsement of Work

The recommendations presented herein are officially endorsed by the 2010-2011 Department of Biomedical Engineering Undergraduate Advisory Board. The members of the board are as follows (* indicates a UAB member in their final year at UT):

James Salazar, UAB Chairman

Research Committee

Grace Fletcher, Committee Head

Katie Cowan, Ilana Osadchey, Juan Pardo*, Arman Satari, Ryan Truby

Academics Committee

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External Relations Committee

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Introduction

The initial proposal for the Department of Biomedical Engineering Undergraduate Advisory Board (BME UAB) states: “The Undergraduate Advisory Board will be responsible for using the time, insight, and flexibility associated with being students to help meet current departmental goals.” Pursuing the objectives outlined by this mission statement, the Undergraduate Advisory Board continues to work to enhance the approaches it takes to help the department meet its goals. During the Spring semester of the 2010-2011 academic year, the BME Undergraduate Advisory Board strived to fulfill the mission it established in its founding document.

In Fall 2010, the UAB led several projects all proposed and implemented by students from the UT Biomedical Engineering department. While some of these projects were continued efforts from previous years, others are completely new and highlight the department’s potential for creativity and innovation.

The Fall semester is typically a very busy semester for the BME UAB, in terms of our efforts to improve relations with other BME students, other student organizations and industry, and the Fall 2010 semester was no exception. This year the Town Hall Meeting had an exceptional turn out of students and in turn, the BME UAB obtained valuable feedback for our current projects. The results of the Town Hall Meeting spurred the planning and development of several events that will be executed in the Spring of 2011, with the most significant of these perhaps being the BME Design Competition. Other significant events that benefited largely from the Town Hall Meeting and will be implemented in the Spring of 2011 include Track Night and the Bioscience and Biotechnology Symposium.

Finally, the BME UAB is very excited about the role it played in the development of a UAB in the Civil Engineering department. We look forward to the future success of the CE UAB and hope that this spurs the development of UABs in the other engineering departments. It is our ultimate goal to establish a network of UABs within the School of Engineering as it is our belief that this will increase the amount of interdisciplinary

opportunities available to engineering student and better enable engineering students to not only positively impact the undergraduate experience within their own department, but within the Cockrell School as a whole.

The UAB consists of one Chairman and three subcommittees of five members each, one of whom is the committee head. Each subcommittee is responsible for evaluating the current state of the department in one of the following areas: Research, Academics, or External Relations. Recommendations for improvement were then made at the subcommittee level, based on expertise that the members of that subcommittee obtained in their respective area over the course of the fall and spring semesters.

External Relations

An overall goal of the External Relations Committee is to stay connected with the student base, both in the Biomedical Engineering department and throughout the School of Engineering. By staying connected the BME UAB can offer events and programs that will directly benefit the students. This semester the External Relations Committee focused on three main areas to keep the BME UAB stay connected and to offer events to engineering students. These were, planning the annual Town Hall Meeting, continuing participation in the Student Engineering Council (SEC) and developing other departmental UABs, and organizing the 3rd Bioscience and Biotechnology Symposium.

Bioscience and Biotechnology Symposium

This Fall semester the External Relations Committee began planning the 3rd annual Bioscience and Biotechnology Symposium (BABS). Due to the success last year, many of the details of this years' event will be similar. The main goal for BABS this year is to increase attendance in both student participants and recruiters from the biotechnology industry.

BABS will be held in the Texas Union Ballroom on February 2nd from 1:30pm to 6pm. It will once again be divided up into three sections, a speaker panel, a student research poster session, and a networking career fair. A minor change from previous events will be to shift the focus of the speaker panel a question and answer format rather than three or four separate presentations by the panel members. The BME UAB, along with the Engineering Career Assistance Center (ECAC) and the Natural Sciences Council feel that this format will be more informative to students and allow them to get access to the information they feel is relevant. Also different from last year is that students participating in the poster session will be eligible for a University Co-op gift card raffle drawing rather than the poster session being a competition. This change was implemented in an effort to increase participation in the poster session. The networking career fair section will stay the same with the goal to increase the number of employers attending the fair.

For funding the BME UAB has applied to the SEC, the University Co-op and also to the Events Co-sponsorship Committee (ECC). The SEC gave \$500 to the BME UAB's major projects and BABS will be receiving a portion of those funds, and the ECC awarded \$550 to be used towards equipment rental and set up. The BME UAB expects to hear back from the Co-op during the first week of the spring semester.

To increase student attendance, a big push is being made on the advertising front, primarily through email reminders, both from ECAC and directly through departmental emails. The direct emails were decided to be more effective than the mass emails all undergraduate engineering students get weekly because more attention is typically given to the departmental emails. The Graduate Engineering Council has also been contacted and made aware of the event so they can advertise directly to graduate students who might be interested in participating.

BABS will continue to be organized throughout the beginning of the spring semester and an even more successful event than in previous years is expected.

Student Engineering Council Participation

For the Fall Semester of 2010, four members from the BME UAB attended bi-weekly general meetings and participated in the Academic Affairs Committee of the SEC.

After applying for funding, the UAB received \$500 in appropriations from the SEC for its future events and endeavors. It has been yet to be determined what the exact breakdown of these appropriations will be but this funding will be directed towards the three following events: The Bioscience and Biotechnology Symposium, the Design Competition, and the BME Research Grant. The BME UAB will issue a report on the use of these funds to the SEC after each event.

All four BME UAB representatives also participated in the Academic Affairs Committee. The main focus of this semester was to provide guidance in establishing a Civil Engineering Undergraduate Advisory Board (CE UAB). BME UAB members made improvements on its previous attempt to set up a UAB in the Mechanical Engineering Department in order to help the CE UAB gain approval.

One civil engineering student who showed a lot of interest attended a BME UAB meeting and advertised the idea to others to form a small group. BME UAB members discussed the concept with this group, helping them to understand how a UAB works as well as how the CE UAB would differ from the BME UAB. The discussion allowed the civil engineers to pinpoint their goals for the CE UAB. They were especially interested in the idea of hosting a Track Night for their department and wanted to ensure that the Architectural Engineering Department was also represented in their UAB.

With these ideas and others in mind, the founding members of the CE UAB formulated a proposal and had it approved this semester. Next semester the BME UAB hopes to work with the newly established CE UAB, as well as to continually work toward forming other UABs in other engineering departments.

Town Hall

Planning of the Town Hall Meeting

The primary concern when planning the Town Hall Meeting was to determine which events the BME UAB should focus on in the upcoming semester. It was decided that, after an initial introduction speech by the chairman, the participants would be split up into groups. These groups would each be led by three BME UAB members, where each of the events would be discussed and the interest of the students would be gauged. The following events were discussed: Track Nights, Bioscience and Biotechnology Symposium, the creation of a BME Research Grant, a Research Poster and Presentation Seminar, an REU (Research Experience for Undergrads) Database, and the Design Competition.

After determining the interest level for each of these events, the competition part of the Town Hall Meeting would commence. Unlike last year, where each group was asked to come up with an innovative event for the BME UAB to work on, the focus of this year's competition was to design an original problem that can be addressed in the Design Competition. Each group was asked to determine a design problem that addresses real-world health issues. The members of each group would then be asked to present their idea. In order to stimulate student interest, a prize of a \$5 I-Tunes gift card will be given to the members of the group whose design competition idea was chosen.

The time chosen for the meeting was Tuesday, October 26th at 6:30pm. This was decided the most appropriate time because it is directly after a main BME class, Biomedical Engineering System and Signal Analysis. By making the meeting at a time that would be convenient for many students, and providing pizza, a large turn-out was expected. The main goal of the meeting was to create a new idea for the Design Competition that is inspired by undergraduate students, as well as to determine which events the BME UAB should focus on in the upcoming semesters. By splitting this meeting into two sections, one which consists of explaining and asking for opinions on the BME UAB ideas and another which comprises of a competition to inspire innovative design ideas, this goal was achieved.

Town Hall Results

This year at the Town Hall meeting, the UAB decided to pass out surveys in order to receive feedback that could help understand what students are most concerned about. There was a larger turn out of students this year, which is helpful so that more students can voice their opinions about how the events are helping or affecting them, or even how these events can be made better in the future. In order to hear how interested students are in the major events (Track Night, BABS, Research Grant, REU Database, Poster Seminar and Design Competition), the BME UAB administered an optional survey of which about 30 students completed. The results have been compiled, and from them the BME UAB has gathered that most students were interested in the events, but we should still aim to seek the support of more students in order to have these events become more successful. The feedback obtained and the survey results are summarized for each event below. The survey results are also visualized in a table and a number of graphs in Appendix A.

Track Night

A new event to be hosted in the Spring of 2011 is Track Night. This is essentially where there will be a breakdown of the 3 possible track choices in the Undergraduate studies of Biomedical Engineering, and help students become more informed before they make their track choice. Students said they would

like to see Seniors, Graduate students or even industry speakers who could let them know what type of work they can get with education from each different track. Also, students indicated that they would also like to be informed on what kind of research is being undergone for each different track. This event seemed to excite most students, as 14 students said they were “extremely” interested in it and 10 students said they were “somewhat” interested in it. There was also 1 student who replied with “Indifferent”, 1 with “Not Very” and 3 that said “Not at all”. This event would apply to 1st, 2nd or 3rd year students primarily, because they would be the focus of the Track Night since the goal is to educate them about the possible track choices and aid them in making a decision.

Bioscience and Biotechnology Symposium

The Bioscience and Biotechnology Symposium (BABS) is an old event, and this upcoming Spring will be the 3rd annual BABS. It will function as a three-section system of a speaker panel, research poster presentation and mini career fair. Many students gave their feedback during the Town Hall discussion as to how to improve BABS, but feedback was generally positive about the speakers chosen and time allotted for each of the three-parts. This event gained a lot of interest from the survey, as 17 students said they were “extremely” interested in it, and 10 students said they were “somewhat” interested, and 3 students said they were “indifferent”. Most students who had attended the event before said they would be excited to attend again in the Spring, and new students said they would be interested in learning more about it.

Research Grant

The Research grant also seemed to spark interest from many students, primarily those who are currently involved in research. Others who were not said that it was interesting how it was specific to Biomedical Engineering based research. The majority of students said they were “extremely” interested and “somewhat” interested (11 students and 13 students). There were 3 students who responded that they were “not very” interested and 3 responded that they were “indifferent”.

Research Experiences for Undergraduates (REU) Database

There was a lot of response about the REU database when discussed at the meeting. Some students were concerned that it would not be much different from existing REU websites, so the BME UAB took suggestions from them on ways to make it specific to undergraduate students in BME. Suggestions included: having tips on how to make the application process more efficient, ways to build up a resume or something that would help facilitate the process of getting involved in research, but not just a link to email a professor or graduate student. Overall positive feedback was received from students, saying they would like to see it up and running and be able to access it easily. Nearly all of the students indicated that they were “extremely” interested in utilizing the REU database, and the rest said they were “somewhat” interested. From this the UAB found that the REU would help nearly all of the undergraduate BME students, those who are currently involved in research or those who are looking to get involved.

Poster Seminar

In regards to the poster seminar, during the Town Hall meeting it seemed that mostly older students i.e. 3rd, 4th and 5th year students showed interest. The students who were involved in research currently said they would be excited to attend because they currently have to make a poster for presenting at the end of their semester of research, so it would be very beneficial to them. There were a few concerns that it may be hard to get attendance high at the event. Most students also said they would like to know specifically who they would be able to present their poster to, before they would commit to attending. Most people said they were “indifferent”, and 7 and 9 people said they were “somewhat” interested and “extremely” interested. Attendance may be a problem at this event, so the UAB would have to work to find interesting professors or industry companies who would attend for students to get excited about the event. Publicizing the event well in advance would also be important to a successful seminar.

Design Competition

A major event hosted in the Spring is the design competition. There was positive feedback from nearly everyone who attended or participated in the robotic arm design competition last year. A significant part of the Town Hall meeting was dedicated toward asking students to come up with a proposal for the design competition this upcoming spring, and giving us their feedback on how to improve it from last year. Many good propositions toward what the topic should be this year were received (see Academics Committee section for more details). The Town Hall results indicated that the BME UAB should review different aspects of the topic subject because some students felt that the judging could have been done in a better way (more consideration on design). Also the BME UAB found that students liked how the robotic arm problem was open ended, and the teams could modify whatever aspect of the arm they wanted to; the BME UAB will aim to keep this aspect of the competition to allow students to be creative with the topic. Nearly all of the students said that they were interested in the design competition. 9 students said they were “extremely” interested and 15 responded that they were “somewhat” interested. The BME UAB expects to have more teams participate in this year’s design competition due to the positive feedback about it at the Town Hall meeting, and all the students seemed excited to learn what the topic would be for this year.

Research

This past semester, the Research Committee directed its attention to assisting other BME UAB Committees with their projects and began to seek further funding for the Biomedical Engineering Research Grant. The Research Committee also deliberated on what the best ideas were for getting information about research opportunities to undergraduates. With more undergraduates deciding to graduate in five years, undergraduate students are increasingly deciding to complete undergraduate research projects during their time at The University of Texas. The Research Committee is eager to assist these interested undergraduates in having an optimal research experience.

Biomedical Engineering Research Grant

In Spring 2010, the BME UAB received \$150 from the Student Engineering Council (SEC) for use towards the Biomedical Engineering Research Grant. This semester, the SEC also allocated \$500 to the BME UAB's major projects and the Research Grant will be receiving a portion of those funds. The Research Committee would like the first Biomedical Engineering Research Grant to have an award of at least \$1000, so there is a significant amount of fundraising still to be done. Although the University Co-op, SEC, and Senate of College Councils are potential sources of monetary resources for funding the Biomedical Engineering Research Grant, the Research Committee will continue to seek out other financial sources in the coming semesters. We hope to have at least 3 fundraisers spread through the Spring 2011 semester. Having industry affiliates sponsor and fund the Biomedical Engineering Research Grant was discussed with Michael Powell, Director of the Engineering Career Assistance Center (ECAC). After further consideration, application to the Biomedical Engineering Research Grant may need to be extended to the entire undergraduate engineering student body in order to receive industry support and sponsorship. While the Research Committee originally hoped that such a research grant would go to a Biomedical Engineering student, the Biomedical Engineering Research Grant could still be open to all engineering undergraduate students, with the requirement that it must go to a student conducting

research related to the biomedical sciences, if it appears next semester that industry support of the Biomedical Engineering Research Grant is necessary.

The Research Committee was faced with funding, sponsorship, and participation considerations this semester that will continue to be addressed next semester. Apart from obtaining additional funds for the Biomedical Engineering Research Grant, the Research Committee will decide on sponsorship and participation requirements next semester in addition to formalizing the grant's application. Once enough funding is received and/or sponsorship for the grant is decided upon, the Research Committee will begin organizing the grant's application review committee and release the application for the first Biomedical Engineering Research Grant. We are hoping that Fall 2011 will be the first semester the Research Grant is available to undergraduates.

Internship and REU Database

The Internship and REU Database the Research Committee has maintained was not implemented as planned for access on the UAB's website. We decided that since there were comprehensive lists elsewhere on the internet, keeping up a list ourselves and updating it every year was not the best use of our time. We have made a list of helpful hints for researching as an undergraduate including how to approach professors, where to look for REU's, and why research is important. Next semester, the Research Committee will work with the BME UAB's Webmaster to upload this information onto the BME website. In addition, this information will be found in bookmark form either in the undergraduate advising office or in the LRC.

Academics

The main focus of the Academics Committee this semester was planning and preparing for next semester's design competition. The Town Hall was used as a forum to brainstorm several potential design tasks for the upcoming design competition. After thoughtful consideration, the board decided to pursue a design competition centered on the design of a robotic arm that is capable of performing surgical procedures. In addition, the Academics Committee also spent significant time this semester investigating the development of a BME department blog, planning for a new UAB event, the BME track night, and improving intra-departmental communications.

Design Competition

Purpose and Background

The purpose of having a Biomedical Engineering Design Competition at the University of Texas is to develop an innovative and scientific way of thinking and to foster undergraduate experience in the engineering field. In a study to examine the role of design competitions in undergraduate engineering education, Kaiser et al concluded that design competitions are not only extremely valuable in engineering education but also provide students with hands on learning experience and pushes them to strive for excellence.

The ultimate goal is to define a worthy Biomedical Engineering problem that addresses real world health issues utilizing the creativity of engineering undergraduates. We intend on continuing this design competition annually while gradually making the fundamental design problem increasingly complex. Biomedical Engineering is the most recent engineering field and hence it is not easy defining a specific BME design problem. To aid in the definition of a new BME design problem, a competition was held at this semester's Town Hall meeting where teams were challenged to come up with a BME design problem. From the Town Hall, the Academics Committee chose three design problems (detailed below) to further develop

and proposed these to the rest of the board. These three ideas centered on the following topics: Drug Delivery, Robotic Surgery and World Health. In order to maintain our goal of presenting BME undergraduates with an increasingly complex design problem, it was decided that it would be most feasible to build off the success of last year's robotic arm competition and pursue a surgery oriented robotic arm design competition.

Drug Delivery

The task of this challenge is to design and create a polymer-based particle able to deliver a certain solution at a consistent rate so that after a given amount of time the resulting amount of solution released is accurate to the target amount.

Scholarly Motivation

The delivery of substances through a variety of vectors is a prominent component in the field of medicine. Methods that utilize the body's ability to absorb materials have many implications for the personalization of medication. Convenient administration of medication through means of oral ingestion or injection allows for those with chronic ailments who require medical attention to live apart from the facilities from which they receive treatment. This project acts as the foundation for an affordable system that facilitates progressively domestic treatment.

Sample Manufacturing Procedure

The manufacturing procedure of the polymer-based carrier devices includes three steps: 1) the creation of a certain concentration of alginic acid solution, 2) the preparation of a certain concentration of calcium chloride solution, and 3) the creation of the carrier device shape. For example, the preparation of 20 mL of a 2% alginic acid solution would include the thorough mixture of 0.6 g of alginic acid powder with 28.4 mL of H₂O. In order to prepare a 2% calcium chloride solution, 0.8 g of calcium chloride dihydrate is mixed with 38.2 mL of H₂O. The last step of the sample procedure utilizes a 30 gauge needle and syringe loaded with the alginate acid solution to allow a drip into the calcium chloride solution, creating a spherical shaped carrier.

Demonstration Procedure

Pre-prepared red and blue dye solutions are to be used for loading into the contestants' carrier particles. Contestants will manufacture beads for the uptake and release of each color and load them with either the blue or the red dye; one set of particles will load blue, the other red. Once each bead is loaded, the respective red and blue loaded beads will be placed in a 100 mL beaker filled with H₂O. After 5 minutes of release, a 1 mL of the solution sample would be taken and run through a spectrophotometer set at a wavelength of 400nm, which is the approximate wavelength for violet. Preceding the tests, contestants will check in their design to confirm their accordance with the design parameters set forth below.

Demonstration Grading

As this challenge is built around the concept of home-based medication and treatment, the minimization of the costs for such devices in question is very important. Another key component that will be considered is the accuracy of the delivery. An example grading scheme for this component is detailed below:

Efficient Use of Material:

$x < 2g$ (20 points)

$2g < x < 5g$ (10 points)

$5g < x < 10g$ (5 points)

Accuracy of Delivery:

Contestants with the closest reading to the target optical density (40 points)

Each progressively further reading (35 points, 30 points, 25 points ... 10 points)

World Health: Water Purification

Another possible avenue for a future design competition is one concerning efforts to cheapen the manufacturing costs of biomedical equipment for use in areas of the world in which financial resources are not nearly as abundant as they are in the United States. One such idea is creating clean water. In this competition sequence, groups will be given 2-4 weeks to design a purification system that takes into account large particle

filtration, pH adjustment, chemicals to decrease the amount of bacteria, and systems to remove substances such as lead and calcium. During the competition, each group will be given 3 unlabeled water samples, which they will have to first analyze for its contamination and then address using their designed system. The exact protocol for such a design is yet to be finalized.

Robotic Surgery

Last year's competition using the robotic arm was quite a success, but was still not perfect. During our latest Town Hall Meeting, the Academics Committee received feedback regarding how the Design Competition can be improved. Through the Town Hall meeting, the Academics Committee also assessed that there was interest in a surgical variation of the robotic arm design completion, if the previously mentioned improvements could be implemented. Realizing this interest and also appreciating that the BME UAB still has a significant amount to learn in terms of the development and navigation of a successful Design Competition, the BME UAB has decided to pursue a Robotic Surgery oriented Design Competition. Although the Design Competition is still very much a work in progress and the Academics Committee has not yet decided how the surgical element of the competition will be implement, below are some of the improvements we hope to make in the upcoming semester.

Structure of Competition and Improvements

Teams will be comprised of 4 - 5 members. They will be supplied with build kits and a spending limit will be imposed on any additional components teams intend to use as modification. The competition is open to all students enrolled in the University of Texas at Austin. The final event will consist of both a presentation and timed demonstration. The presentation will consist of a brief oration (with the aid of slides and/or video/audio) where the teams will discuss the technical aspects to their build and modifications. Teams will also be required to show a very brief clip of some other relevant task their assembled device has been designed/programmed to perform. A team of judges will grade this presentation. The timed demonstration will entail the actual performance of the task. Teams will compete against each other to determine the design

that is able to perform the task best and fastest. Other aspects, such as aesthetics, number of modifications, etc. will also be considered. Awards in the form of cash (certificates and plaques) will be given to the winning design teams and members.

The competition will have a very similar format to last year's competition, with several possible improvements. One of them requires the teams to present their idea to a panel of judges in a formal setting. The presentation will help the students develop the skills of properly documenting and efficiently explaining their designs. This will also allow the judges to see the effort and thought process put into the project. Another proposed idea suggested giving the teams with weaker robots a chance to win by adding a design component to the overall score. Overall, we wish to put more emphasis on the design component of the robot instead of the manufacturing component. Finally, one idea involves having the teams compete against each other instead of individually judged. This will save precious competition time and provide chances for variations and decision making. Teams could also possibly choose to cooperate with other teams for bonus tasks. These new improvements will be discussed and reviewed in the beginning of the Spring Semester.

The presentation will involve explaining work process, design elements, and extra design difficulties encountered. This will help the team members develop skills of documenting and presenting a design from start to finish. This will also allow the judges to better understand the design concepts of the robots and provide better judgment. Thus, the teams with the better design ability will be accounted for their effort. A design presentation can consist not only of a Powerpoint presentation, but also a design folder and proposal paper to further document and explain their process. This will also prevent any plagiarism among the teams as each team will be forced to give out their whole design process from start to finish. This presentation can be arranged days before the start of the robot competition and should count as much as the competition itself. An emphasis will be placed on design processes more and less on the robot build itself, in case we have some great thinkers who didn't have the help/skills to manufacture the actual robot (or robot failed completely on competition day). Also, a separate "best design" award should be given out.

Track Night

One of the ideas that the BME UAB received the most positive feedback from the Town Hall Meeting was “Track Nights.” The night will serve to provide students with information about the three track choices offered in the undergraduate studies of Biomedical Engineering, and help students become more informed before they make their track choice. Many students voiced that they felt a program like this would be beneficial in making their decision and would like to see involvement from current BME seniors, graduate students, or industry speakers. The students want to learn about the classes they take and what career options they have with an education from each different Track. Also, students indicated that they would like to be informed about what kind of research is being done in each different track.

For the logistics of the event there are multiple things to consider. The first option is to have all 3 tracks featured in one night. There are benefits to this because students may not attend a certain track’s night if they do not think they are interested, but time constraints could be an issue with providing students all the information about 3 Tracks in one night. Once we figure out a format for the Track Night(s), we will need to pursue seniors, graduate students, professors, and potentially industry representatives to be speakers at the event. We will also need to ensure that we will get student attendance to make this event a success. Much of the planning for this event will be done early in the Spring 2011 semester, because we are thinking this event will happen the week of April 11th. We want to make the event before students register and have advising for their Fall 2011 classes.

Blog and Communications

The Academics Affairs Committee has continued their work on a BME department blog, through the Wordpress service. This will enable students to connect with the department on a more thorough level, and provide another source for keeping everyone updated on important notices and events. Over the course of

the upcoming semester the blog will be finalized (pending approval) and customized to fit the needs of the department.

Concluding Remarks

The Biomedical Engineering Undergraduate Advisory Board would like to give thanks to the BME Department's faculty, staff and advisory Committee for allowing the UAB to make a small contribution to the department. We continue to believe in our mission to help meet current departmental goals, as well as, connect students to the workings of the department; in turn gaining a sense of involvement. Hopefully, our efforts and projects will continue engage the student community and foment an interest in the growth of the Biomedical Engineering department.

Appendix A: Town Hall Meeting – Survey Results

	Not at all	Not very	Indifferent	Somewhat	Extremely	N/A
Track Night	3	1	1	10	14	1
BABS	11	0	3	10	17	0
Research Grant	0	3	3	13		0
REU Database	0	0	1	12	17	0
Poster Seminar	0	3	11	7	9	0
Design Competition	0	3	3	15	9	0







