

**Proposal for Creation of the  
Undergraduate Advisory Board  
In the  
Department of Biomedical Engineering  
University of Texas, Austin**

Author: Avi Wolfson

Contributors: Ramya Sankar, Mae Sattam, Tricia Teoh, Nitin Udpa

Drafted 12/18/2006

Last Revised 2/14/2007

## *I. Introduction and Motivation*

Undergraduate students are not just customers of the Department of Biomedical Engineering. Undergraduate students are a constituency group with as much vested in the success of the department, and thus the value of the degree and experience received therein, as any other relevant group. It makes little sense, then, that undergraduate students are largely kept isolated from internal department affairs. This is the case throughout the university as a whole, and is evidenced by the divide between student organizations and university affairs. The vast majority of student organizations serve as professional, academic, social or intellectual support networks for their members. Often departments and other university entities assist student organizations in meeting these ends. Seldom, if ever, though, are student organizations called upon to help meet departmental or university goals. In fact, the student organizations with the most prolific interactions with the university are those that act as a mouthpiece for student interests (i.e. Student Government). This leads to the implication that student goals and university goals are inimical and that a student voice is required to ensure that student needs are addressed. It is not merely a dialog between undergraduate students and university entities that is needed. What is required is a mutually beneficial partnership.

Both students and university entities benefit from the same things, and therefore ultimately have the same goals. Both groups want top tier education to be offered. Both groups want to engage in cutting edge research. Both groups want to forge new ties with other academic institutions and industry, and to strengthen those ties that already exist. Why then should it fall to the department alone to ensure that these goals are met?

It is true that many departmental administrators are uniquely qualified for executing strategies to address the aforementioned goals. These individuals have dedicated much of their lives to ensuring that this academic institution runs smoothly and continues to strive towards excellence. It should never be suggested that they work in vain or that their efforts could be matched by students. It is simply that those efforts should (and could!) be supplemented by a currently underutilized resource: undergraduate students.

What undergraduate students lack in experience, expertise, and macroscopic (big picture) perspective, they compensate for in time, flexibility and microscopic perspective

(day to day student life). The first responsibility of undergraduate students is, and must be, academic success. For many students, however, this responsibility is not wholly time-consuming. This frees students to pursue other activities. Students also have unique insight into the end educational product provided by the department. Most importantly, though, students are in a position of incredible political flexibility. As long as undergraduate students are respectful, ethical and studious they are not accountable to anyone except the person writing their tuition check. This allows students who meet those criteria to pursue virtually any project they like.

## *II. Recommendation*

For these reasons, it is recommended that the Department of Biomedical Engineering at the University of Texas establish a structure in which select students can serve as partners of the department. **This Undergraduate Advisory Board (UAB) will be responsible for using the time, insight, and flexibility associated with being students to help meet current departmental goals, and ultimately, influence future departmental objectives and policy.**

The group that is being proposed is not meant to serve as a voice for the student body. It is for a small number of BME students who have an interest in serving the department through action. Hopefully it will also aid in setting future departmental goals and policy.

## *III. Implementation*

The UAB will have three permanent committees: (1) Education, (2) Research, and (3) External Relations. If the need should arise, the Chairman of the UAB may create up to two additional temporary committees. The charter for a temporary committee expires at the end of each long academic semester, unless renewed by the Chairman. Every member of the UAB will be required to serve on one, and no more than one, committee. Each committee will have a committee head, who will ultimately be responsible for that committee's work. Committee members are expected to increase their knowledge and expertise regarding their particular committee's subject. This entails learning about where the department currently stands, where the department hopes to go, and what is being done at peer institutions, regarding the topic in question. This knowledge should be

reinforced by meeting with current faculty, students and staff in order to obtain a broad perspective in relevant issues.

#### *IV. UAB Responsibilities to the Department*

By the end of the fall semester, each committee must have a report prepared regarding the state of that committee's subject and recommendations for improvement. These reports should emphasize how undergraduate students can contribute to, and benefit from improvement in the committee's domain. These reports will all be presented to the Department Chairman and Assistant Chairman so that they may offer advice on what paths should be pursued and how to best pursue them. It will be the job of each committee to attempt to implement the decided upon recommendations during the spring semester.

#### *V. Department Responsibilities to the UAB*

The UAB will be dependent on the department for guidance and support. It is of the utmost importance that the department shares its vision, goals, and constraints with the UAB so that the UAB understands the framework in which it must operate. For this reason, UAB representation is requested at any event during which departmental goals and/or constraints are to be discussed. Ultimately, success of the UAB is contingent upon a vested interest of key department personnel in UAB activities. In order for the UAB to take full advantage of the resources provided to students at the university, it needs to be registered with the university. It is hoped that the department will provide for the annual \$10 registration fee.

#### *VI. UAB Membership*

It is acknowledged that not all students will want to participate in such an organization, nor should they have to. The tasks described herein should fall to a group of bright, outgoing and innovative students who are willing to dedicate their time and abilities to the UAB. Therefore UAB membership will be limited to sixteen undergraduate students. At the end of each academic year, the Chairman will present a list of all returning UAB members to the UAB advisor. It will be the responsibility of the advisor to approve the returning members for the upcoming academic year. If a member has other commitments that would prevent him or her from being an active member the next academic year, or if a member has failed to meet what was expected of him or her

that year, as determined by the majority of members serving on that member's subcommittee, that member should not be included on the list of returning members.

### *VII. Faculty Interaction*

Every Department Faculty member in the Department of Biomedical Engineering will have a UAB liaison. The liaison is responsible for meeting with his or her faculty member(s) at least once per semester. This will be done to broaden UAB perspective. Permanent members will be paired with at least one faculty member, while rotating members will be paired with at least two. Every member of the UAB will be required to participate in this.

### *VIII. UAB Advisor*

The Assistant Chairman of the Department of Biomedical Engineering will serve as the advisor for the UAB. The UAB and its members are accountable to the advisor and the advisor may dismiss members for professional behavior unbecoming a member. Furthermore, it will be up to the advisor to ensure that the UAB receives appropriate departmental support.

### *IX. UAB Chairman*

The UAB will have one Chairman per academic year. The Chairman is responsible for assigning committee membership, committee heads, faculty liaison positions and scheduling and conducting general UAB meetings. The Chairman is ultimately responsible for the UAB producing meaningful, tangible results.

All nominees for the position of Chairman must plan on being a student in residence at the University of Texas, Austin during the entirety of the following academic year. Any member of the UAB may nominate an eligible member of the UAB for position of Chairman. The Chairman will be selected by the members of the UAB by simple majority vote. Should no candidate receive a simple majority of votes, the two candidates who received the most votes will have a run off vote. All nominations for Chairman must be made by the meeting nearest to April 8 and the election of the new Chairman must take place by the nearest meeting to April 15. The Chairman Elect will become the Chairman of the UAB following the last day of spring semester final exams in the year that he or she was elected and serve until that time the next year. Should the

UAB Chairman not be able to complete his or her term for whatever reason, a new Chairman will immediately be selected by a new vote of the UAB membership.

#### *X. Conclusion*

It is hoped that the implementation of the UAB will allow the Department of Biomedical Engineering to take greater advantage of the resources which it possesses. The ultimate goal of the UAB is to create a partnership that is mutually beneficial to this department and to the students within the department. The department is full of talented students who would surely jump at the chance to have such a direct impact on their department's success. In turn, the experience provided by membership in, and service to, the UAB should enrich members in a way that would otherwise be impossible to obtain. Therefore, the existence of the UAB itself will serve as a perfect starting point in implementing the ideals which it espouses to value.

#### *XI. Appendix – Student Proposals*

**The following section consists of proposals made by current BME students. These proposals are to serve as examples of the types of issues that students perceive could be ameliorated by student efforts. They are not meant to mandate any course of action or direction for the UAB.**

##### *A. Academic Proposals*

BMEs have highest number of required hours in the College of Engineering, but they should be able to expand their intellectual horizons without having to double major or take five years to graduate. I recognize that a primary reason for all of these required courses is the multidisciplinary nature of BME, but speaking from a Track 2 perspective, I think we can consolidate or take out a few classes that don't pertain to our particular technical area. For example, a series of classes that could be reconsidered are Materials (CHE 350), Biomaterials (BME 352), and Cell & Tissue Engineering (BME 379). What we learned in CHE 350, we reviewed in BME 352. Admittedly, I don't know much BME 379 since I didn't take it—I opted for Sensors (BME 354). But that was because I thought it would be more of the same: stress, strain, viscoelasticity, adhesion, etc. It could be possible to turn these three classes into two.

To do this, at the end of each semester students could take an anonymous survey about the classes they took that semester. This survey would ask them how they felt about

the class and whether/how they could see themselves applying the concepts they've learned in future courses. It would also ask about redundancy and the re-teaching of concepts from previous classes. If this type of feedback and re-evaluation of the existing degree plan could lead to even one or two requirements being replaced by electives, it would make a world of difference. –**Tricia Teoh, Track 2, Class of 2007**

### *B. Research Proposals*

One of the problems that I see in the research field of the BME department is that students delay working in labs until later in their college careers. Personally, I had wanted to volunteer in the Biomedical Informatics Laboratory from my first semester. However, I waited until I only had 3 semesters left, primarily due to lack of confidence on my part. Not only was I unsure as to if Dr. Markey would accept an inexperienced kid, but also I did not feel that I was capable enough to positively affect the lab. This is a tricky problem, as focusing on research too much may alienate the students who do not wish to do research. One potential solution would involve an optional course that will involve representatives from each of the labs speaking about what they do on a basic level, potentially demystifying their work. –**Nitin Udpa, Track 3, Class of 2007**

Since the BME program is fairly small program, I believe it would be feasible to have more exposure to research and design like classes prior to the last year. This can be implemented through a class that works more like a lab than a lecture class. This could introduce some of the basics of research at an introductory level. Exposure to this early on will get more students engaged and interested in research. If this is not feasible, a less demanding course of action would be to implement a graduate student mentoring program. This would allow students to get their feet wet, and would bridge the graduate population to the undergraduate population. –**Ramya Sankar, Track 1, Class of 2007**

### *C. External Relations Proposals*

It makes little sense that at the last Engineering Career Expo companies with names like “Avian Medical Devices” would say that they would rather talk with mechanical and electrical engineering students than with biomedical engineering students. Sadly though, that is the reality. When asked about why they would do this, the company representative said that most biomedical engineering students aren't trained

with some of the basic skills needed for industry work such as CADDing experience or knowledge of mechanical or electrical systems. Companies like Avian believe that it is just easier to find a mechanical or electrical engineer and teach them the life sciences on the job rather than vice-versa. While this argument does have some merit, it is important that we as students attempt to change industry's perception of us.

As students we should reach out to industry and find out what the skills they expect their incoming employees to have are. We can then look for ways to develop these skills, either through curricular or extra-curricular means. We should also make an active effort to keep in touch with our alumni; recent alumni are also our old friends and peers. They can give us great insight into what is expected outside of our undergraduate experience and I believe they would love more chances to come back and interact with younger classes.

Another part of this problem that must be addressed is that technical track 2 is perceived as the pre-med track. This encourages students to think early on that they are only using biomedical engineering as a springboard to medical school and that they don't need industry related skills. This seems to be reflected in the curriculum that track 2 students take and contributes to the stereotype that the representative from Avian espoused. Each track should be represented as having a "pre-med option" (this would only affect what electives are taken and not the total number of classes) and more stress should be put on the industry specific skills that would be unique to each track. **–Mae Sattam, Track 2, Class of 2007**