

Baylor University
School of Engineering and Computer Science
Board of Advocates
Spring Meeting – April 19, 2013
Baylor University

Board members attending: Jay Battershell, Mark Cannata, Ken Carlile, Joe Cestari, Romelia Flores, Fred Logan, Hector Martinez, Don McErlean, Craig Nickell, Harold Rafuse, Steve Smith, Greg St. Denis, Shawn Sedate, Dean Swisher, Rick Tullis Trent Voigt, and Jim Wiethorn

Guest of the Board: Douglas McBride, Morning Star Consultants

Board members absent: Brad Crawford, Beth Casteel, Mark McCollum, Bill Mearse, Harold Spangler, Andy Spencer,

Welcome

Following a continental breakfast, Dean O’Neal convened the meeting. He asked the Board to introduce themselves to the group. He led in an opening prayer. He reviewed the day’s agenda and explained how the mid-day poster presentation would go

Dean’s Report

Dean O’Neal gave an update on School progress since the Board’s October meeting. He introduced personnel changes with both faculty departures and hires and staff promotions. He described the progress at the BRIC and introduced a recent development with possible additional space in the Hankamer/Cashion space when the new Business School is constructed.

He also thanked the Board for their input into the new project management certificate. He relayed the administration’s approval for the freshmen engineering “pre-engineering” program and explained what the minimum admission requirements would be.

Dean O’Neal outlined the future directions of the general engineering degree. While keeping the biomedical tracks in place, Dean O’Neal explained that several other existing tracks that are so similar to the mechanical engineering and electrical and computer engineering degrees would soon be eliminated. Regarding the computer science and mechanical engineering Ph.D. proposals, Dean O’Neal explained where each of these currently stand.

He also introduced the notion of creating a chemical engineering major. The last time a chemical engineering major was established in Texas was 1969. There may be a unique opportunity to plant a chemical engineering major at Baylor due to the increase in large expenditures along the Gulf coast in the upcoming decade and pharmaceuticals and other industries located in Texas who hire chemical engineers. Finally of note: The Texas Higher Education Coordinating Board is not approving new engineering programs in state schools.

In response to the Dean's Report, the Board had the following questions.

- Q: Will there be any more open faculty seats? A: No; for the upcoming academic year, the plan will be to hire adjunct faculty members.
- Q: Have the facility capabilities in the Hankamer/Cashion space been examined? A: Pat Hyman, Director of IT and Facilities for ECS, has the floor plans and is working to see how the space can accommodate ECS.
- Q: Are plans for the chemical engineering major being coordinated with Chemistry department? A: They're on board as long as we don't "flood them" with students. The original premise was a track w/in the EGR program; however, the Board of Regents propelled it into a full major concept.
- Q: Is there demand for Chem E-s? A (from a fellow Board of Advocate member): Yes; there is a high demand.
- Q: How long will it take to put the Chemical Engineering major in place? A: In Year 0-hire a chair to begin bringing other faculty and recruiting students. Accreditation occurs after first students graduate. There will be further discussion with Regents in May.
- Q: How long-term is research in ChemE? A: Looking at existing programs in Texas, average research expenditures is \$350,000 per faculty member. Putting up a high quality program has potential to help Baylor become more research-active and offer our students a broader range of disciplines.
- Q: To what extent will mechanical engineering overlap with ChemE/Petroleum? A: You can turn an ME into a petroleum engineer, but there isn't a good geological component. ECS could help the BU Geology program. We want to make sure there will be employment upon graduation.

An additional observation from Mr. McBride was that petroleum engineering can overlap with chemical engineering. There will be impact from the shale drilling in Texas. Texas could become energy independent, and to do that we'll have to double/triple the number of wells in order to get the production. With Baylor's "fantastic" chemistry and geology departments, there is already very good synergy.

Development Report

Dean O'Neal introduced Kristen Box, ECS Director of Development. Kristen gave a brief overview of (1) the organizational changes in University Development since the last Board meeting, (2) her background and qualifications, (3) the ECS fundraising progress and (4) future plans.

In response to Ms. Box's presentation, the Board asked the following questions:

- Q: What is endowment? A: \$2.8 million
- Q: What is the current giving level for a named professorship? A: \$1.5 million for professor and \$2.5 million for chair
- Q: In looking at bigger picture things, is naming the school an option? A: Yes, naming the school and/or building is possible.
- Q: How many ECS alumni are? A: Approximately 2500. We are working to building the ECS alumni network.

An additional anecdote was shared by Mr. McErlean about his experience in a professional development workshop held at a university, following which he was contacted by that university for fund-raising purposes.

Undergraduate Committee Update

Following Ms. Box's presentation, Dean O'Neal introduced Dr. Adam Ecklund, Assistant Dean for Undergraduate Programs. Dr. Ecklund described the formation and subsequent progress of the ECS Undergraduate Committee. The goal of the committee is to "will be responsible for developing a five-year strategic plan for the undergraduate program in ECS that aligns with the aspirations of the *Pro Futuris*." The current areas of focus include:

- Enrollment Management Plan
- Recruitment Plan
- Retention Plan
- New Programs
- Undergraduate Experience
- Articulation Agreements
- Awards

Dr. Ecklund asked for ideas for future conversations. He suggested another way the board can help will be to meet with faculty and administration about these issues. He encouraged the Board to continue to reflect and encourage perfection.

In response to Dr. Ecklund's presentation, the Board asked the following questions:

- Q: Is there any distance learning happening in ECS? A: There is an overall distance learning initiative at Baylor that targets academic units where it makes the most sense, like Nursing and Business.
- Q: What is overall ECS student retention, from freshmen through graduation? A Approximately 45%. Baylor lags behind private institution peers. Recruiting well-qualified students is very important.
- Q: Voigt: University-wide retention? A: (DLO) approx 80%
- Q: SMith: 1st year ECS retention? A: (APE) 80% in 1st year, but lose more in 2nd year. Concern: predictive models of students who won't retain; however, the 1500 SAT student is leaving. We may not be marketing correctly or not challenging them in the right way. Want to be sure we keep the ones who should stay.
- Q: Cestari: Challenge is expectation and accountability at Baylor. Comparing with Rice & Stanford: getting in is the challenge; execution is not.
- Q: McBride: how much does Baylor pay for total package? A: \$54,000 is sticker price, although no one pays that. Example of student going to North Carolina State with full ride.

Following these questions, there was a general discussion of costs to attend Baylor University.

ABET discussion

Dean O'Neal resumed his address to the Board by introducing the topic of the progress since the last meeting on pursuing ABET accreditation for the engineering programs. In general, he said,

the observations made by the accrediting team included the need for more space and attention to the “weaknesses” category within each of the majors. He asked representatives from each engineering program to give an update to the Board of progress made since the fall accreditation visit.

Dr. Mike Thompson reminded the Board of the electrical and computer engineering (ECE) breakout session in which the group brainstormed about expectations. He reflected on the process as encouraging and provided an opportunity to incorporate ideas from the Board of Advocates. However, ABET was “not so happy” with the results and the team said it is difficult to assess broad term objectives. Dr. Thompson’s group looked at other schools’ objectives. He shared a [handout](#) that incorporated other institutions objectives which were stated in a particular way that can be easily assessed. He concluded that ABET does not assess mission statements, and the broader ideas got incorporated into mission statement with formal ECE program objectives that can be measured with assessment.

Following Dr. Thompson’s comments, the Board asked the following questions:

Q: Is it true that assessment is not required? How can one tell if objectives are being met? A: ABET abolished need to assess because objectives are difficult to practically assess.

Q: Are the current objectives being clarified? A: yes.

Dr. Bill Jordan explained the [handout](#) for his department. The Department of Mechanical Engineering revised objectives before ABET visited. The former engineering-wide mission statement was modified for mechanical engineering, specifically. Likewise, the department looked at other mechanical engineering programs and adopted a broader mission statement with specific objectives, which convey “what graduates can do a few years from graduation.” ABET simply eliminated need to assess. Original mission hasn’t really changed.

Dr. Ben Kelley shared a [handout](#) for the general engineering (EGR) program. The EGR program received more criticism by the ABET team. Proper attention wasn’t given in the past to the EGR program, and that caused problems. Changes are in effect that will strengthen the program.

Q: Is there a career path for graduates of BSE if a graduate does not opt to go to graduate school?
A: Currently, there are different stems within general engineering when students have a plan that doesn’t fit within the EE or ME degrees.

Dr. Greg Speegle shared the [handout](#) of educational objectives for computer science. Accreditation will take place during the fall 2014, and the department is taking advantage of the engineering programs’ experience to prepare. Although the computer science faculty is still discussing the objectives, the Department of Computer Science would appreciate any feedback that the Board has. Dr. Speegle asked if the Board thought this is a good direction and whether the faculty should continue to form objectives if assessment was not required.

Board member, Dr. Rafuse, commented, although ABET’s attitude could change [about assessment], he suggested making the objectives as quantifiable as possible. To have measurable objectives and not be required to measure is “silly.”

Dean O'Neal concluded the discussion by reporting that a response needs to be made to the ABET team. He asked for a statement or vote Board to affirm the objectives.

Board Member Mr. St. Denis asked about the need to keep the objectives separated by department. Dean O'Neal responded they need to continue to be separate because ABET evaluates programs separately.

Board Member Mr. Nickell moved to express support for objectives. The ECS Board of Advocates expressed unanimous support for the objectives.

Faculty Research Updates

[Dr. Michael Poor](#), Assistant Professor of Computer Science, introduced himself and gave a little background of his interest in animations and animatronics. He is interested in new ways that humans interact with computers. The specific focus is called "Human Computer Interactions," (HCI) and the focus is usability. Dr. Poor researches how to measure the most effective ways people use an interface. He made the distinction that he was not interested in "user friendly." He said, "Computers don't care how you feel."

He detailed the progression of interface from command lines to graphical user interface (GUI) to a new way of interacting, gesture-based. Dr. Poor's research specialization is in area of game development, a huge, growing industry that has almost eclipsed Hollywood. Dr. Poor said that the gaming industry is shaping computer design, processing, and interaction. Further, companies are looking for students with computer science background and a love for making games. Baylor offers an ABET-accredited bachelor's degree with specialization in graphics or platform management. Students work in teams & create portfolio that can be shown to employers. Baylor's program gives students experience before they leave so they have a portfolio. Dr. Poor's colleague is an adjunct faculty member from Gearbox, a recognizable name to students. Student teams develop a game that Gearbox will produce.

Dr. Poor suggested that the future directions of the Baylor program will include a "Game Development Center" that would provide services for game development companies in surrounding areas. Such a center would be cost effective for companies. Further, students will benefit by creating content for companies under meaningful supervision of the entire process.

At the conclusion of Dr. Poor's presentation, the Board asked these questions.

Q: How many students are currently in the game development program? A: 48

Q: Is there thought being given to possible overlap between the game industry to other technology? A: companies are more concerned with relaying information by traditional means; however, people will become disenfranchised with the technology and tip the point to change the software.

Q: Are there other types of user interface outside of gaming to other industry? A: Yes, but, at Baylor, we're focused on this niche of HCI.

Q: Are “serious games”¹ being included? A: Yes. Serious games are a little easier. If student can develop larger “fun” game, he/she can translate it to serious games.

Q: How does this relate to virtual prototyping? A: Augmented/virtual reality is a huge area of research. Lots of lessons can be learned and translated to other areas, as with virtual prototyping.

[Dr. David Jack](#), Assistant Professor of Mechanical Engineering gave a presentation that showcased several research projects. Dr. Jack’s background includes degrees from Florida State and the Colorado School of Mines. His research lab is named “SIC’EM-Scientific Innovations in Complex Engineering Materials.” Some of his students’ research includes (1) modeling the outcome of injection molding, (2) aircraft: lightning strike layer on airplanes, (3) carbon fiber reinforced plastics, (4) study of composite failure, (5) tie-backs in oil field wells (a project funded by Hess), and (6) high pressure/high temperature stress in oil field wells.

He concluded his presentation by stating that new mechanical engineering faculty will arrive soon who also specialize in materials area and mathematical models.

Afternoon Session

Following a working lunch of student poster presentation judging by the Board of Advocates, Dean O’Neal reconvened the group. He introduced Dr. Ken Carlisle, a member of the Baylor Board of Regents and representative to the Board of Advocates. Dean O’Neal also introduced a couple of discussion topics.

1. Increasing visibility of ECS w/industry, friends of ECS. Dr. O’Neal said there is a need to expand the reach and visibility of ECS with companies. Dean O’Neal reported on some activities he has undertaken, such as attended BU Network events and interacted with Baylor’s Office of Career and Professional Development. Also, he has called on industry contacts from his previous position at TAMU.

2. Departmental industry advisory boards. As Dean O’Neal has participated on ABET evaluation teams to other engineering programs, he noted that departmental boards could reach a broader range of companies and be discipline-specific to the needs of that department.

The Board of Advocates had the following feedback.

Q: This idea makes a lot of sense. There is a bit of overhead in working with Boards. Is Dean O’Neal suggesting that he is willing to embrace this overhead? The Dean responded that there still need to be conversations, but one ECS department chair has already embraced this idea.

Q: Board participants ought to be from industry who will hire the most number of grads. Should it be “departmental” (according to discipline) or should it be ‘vertical” (more representative of industry)? The Dean answered that companies with Baylor alumni employees advocate hiring more like their existing employees.

An observation was made that a broader industry advisory board may be made up of various industry, which can provide a broader perspective.

¹ A serious game or applied game is a game designed for a primary purpose other than pure entertainment. The “serious” adjective is generally prepended to refer to products used by industries like defense, education, scientific exploration, health care, emergency management, city planning, engineering, religion, and politics

Q: Was Dean O'Neal advocating for departmental boards in addition to the School-wide board? The Dean responded that the School's board is focused on long-term health and vision. He perceived having a School-wide board in addition to separate departmental boards. Additionally, with the School's growth, each department will soon hire more diverse

A board member observed that there ought to be more continuous working in between meetings, and this would be easier with department groups. The Dean agreed. The goal, he said, is for this to be a working board. He predicted that at the fall meeting, the morning will be for subcommittee groups (undergraduate programs, development, graduate program, visibility/outreach, etc., student recruiting). The Board's general consensus was to move in that direction.

The Board also discussed alumni's need to feel connected to the University. Dr. Carlisle promised that tickets for football (and basketball) games will be provided for the Dean's use.

It was pointed out that the fall football schedule has been changed, and on Thursday, November 7, a football game will be televised. This might be a good time for the Board to meet.

Board Member Weithorn also announced the 2nd annual Top Shot Competition on December 7.

Meeting Wrap-up

Following a tour of the [BRIC](#), the Board reconvened to reflect on the day. Dean O'Neal pointed out the recruiting advantage that comes with the BRIC. He recounted being able to walk prospective faculty member through so they can envision their research lab.

Q: Is there a virtual tour? The Dean answered no, but that idea will be suggested to Dr. Truell Hyde.

Q: How much BRIC space is finished? A: 1/3.

Q: Is Baylor the only tenant? A: Yes, for now, but L-3 will soon have engineering cadre with some sponsored research.

Dean O'Neal shared copies of a flyer announcing Professional Development Day from the University of Wisconsin-Madison. He suggested an idea for fall Board meeting that includes seminars by Board members on a range of topics. He asked if anyone would anyone be willing to give a professional seminar/panel discussion, including possible visits in class. The Board responded that, with proper coordination, this would be worthwhile, and there was general agreement to do that.

Board Member Sedate summarized the closed session and offered the following feedback of the day.

- He offered compliments to the Dean for his energy, passion, changes, and progress.
- Regarding ECS programs/curriculum, the Board is happy to see deeper connection to industry. Keep up connections to industry.
- The Board offers support for Chemical engineering discussion.
- The Board offers support for project management certificate.

- The Board expressed concern about broader model to deliver programs, the challenge of the balance to filling seats with Ph.Ds who are the right faculty and leveraging those faculty and online learning opportunities.
- The Board also has some concern about ABET and are we focused enough on it. Dean O’Neal responded that ABET follow-up consumed a lot of time and has been a big distraction. ABET team members took identifying weaknesses seriously. ECS sent them a well-documented effort outlining what has been done since the visit. Dean O’Neal expects ME and ECE to receive a “clean bill of health.” The general engineering program is tackling the weaknesses, but may end up with a ‘concern’ that will linger until next visit, in five years.
- The Board agrees with the priority of reconnecting with alumni and asked if existing efforts can be upgraded into a more organized plan. The Board believes this effort needs a champion and suggested a Board sub-committee work on it.
- The Board endorses working committees with more working sessions, less presentations. The Board suggests that the departmental-based boards be postponed and greed to begin with sub-committees first.

Dean O’Neal thanked the Board for their participation. He introduced two potential new members, Douglas McBride & Emile Sevajian (Haliburton).

The meeting concluded 4:45 pm.