

**University of Wyoming - Dept of Mechanical Engineering
External Advisory Board
Meeting of April 27-28, 2007 - Minutes**

April 27, 2007

ATTENDEES: Annette Lynch, Dan Kohlhaas, Don Slaughterbeck, Don Boyer, Frank Fair, Keith Miller, Maureen Hand, Pat Burns, Paul Fussell, Rowland Linford, Stan Graves, William Dolling, Demitris Kouris (ex-officio), Patrick Shea (student member), Brittany Fain (student member), and Gale Bandsma (ME Staff/Recorder).

ABSENT: Peter Davis, Christopher Key, and Manuel Salas.

The meeting was convened at 8:45 by Chair Burns

The Chair welcomed of new members (Annette Lynch, Rowland Lindford and Don Boyer) and introductions where made by all board members. Dr. Kouris then reviewed the material prepared for the meeting.

The Chair briefly discussed the meeting agenda requesting additional input from board members and suggested that EAB might consider forming small working groups based on geographical location or the potential for teleconferencing (including for the fall meeting, if necessary).

The Chair welcomed Dean Plumb for his comments.

State of Engineering, Dean, Gus Plumb

Dean Plumb had no formal presentation. He will be stepping down as Dean and returning to the Department of Mechanical Engineering after a year-long sabbatical. He expressed his satisfaction on the undergraduate program as indicated by success rate on the FE exam. Over the last 10 years, the ME undergraduates have 96 pass rate with US rates in the 80s. This has resulted in a 100% pass rate for the most recent graduates. Dean Plumb noted the success of the capstone experience, especially since more in students are working on projects outside of the university scope. Finally he discussed the graduate program and research activities. Department research has helped the graduate program with graduates where assisting with research. He indicated that Mechanical Engineering has secured more than one million dollars in grants this year, as well.

The Dean was asked by the Chair what his top three challenges have been. He indicated that the restart of the Petroleum Engineering Program has recently been challenging. During the past year, staffing and facility issues with this program have been a constant focus of his attention. Without any other challenges to discuss the floor was opened to questions for the Dean.

The Dean was questioned on the impact of the Hathaway Scholarship Program on Engineering. This scholarship, he stated, had resulted in an increase in enrollment, with fall 2006 enrollment increasing by 7%. Dean Plumb also indicated he expected ~84-85 graduates this year and that Mechanical Engineering is the largest academic program in the college.

When asked about the success of students and the current job market the Dean discussed the career fair. The career fair has been so successful that interested employers (including engineering firms) have been turned away. When the possibility of an "Engineering only" career fair or combined with the College of Business career fair arose, he indicated that 'staffing issues' in the Center for Career Services would make this unlikely.

Queried by the board about the impact of the School of Energy Recourses (SER) on the College of Engineering, he considers the overall impact to be positive. SER will have the

potential for increased faculty and graduate assistantship positions, increased availability of start-up funds, and increase in matching funds from grants and contracts associated with SER.

Chair asked Dr. Kouris to present an overview of the Mechanical Engineering Department.

The State of the Department, an Update – Demitris Kouris

Dr. Kouris presented a PowerPoint presentation (see Appendix 1) reviewing the departmental news, an update on the department and a review of the goals with the EAB.

News included the new NCAR facility which has been approved by the legislature and its impact on UW and Mechanical Engineering (see Appendix 11 and 12), information on the School of Energy Resources (see Appendix 10), and the departments' faculty staffing efforts to receive one or two endowed professorships and attempting to draw from the "Critical Area" pool for new positions.

Update on current departmental staffing (see Appendix 1), international exchange effort, and the graduate program.

Goals Dr. Kouris reviewed the current goals established by with the EAB including Graduate Fellowships, Internship Program, Visibility of the Department and Mechanical Engineering working on Energy issues.

He concluded his presentation with a chart (need reference for data) reviewing the status of UW comparing it with various colleges in the west.

The floor was opened to questions from the board members.

Dr. Kouris was asked about the 12 new faculty positions in SER and how it would impact Mechanical Engineering. He stated that four positions have been allotted for this fiscal year and 16 proposals were submitted to SER to support graduate assistants. SER will help in providing start-up funding for new faculty (an important recruiting tool). Asked if SER will be a degree program, he indicated that currently there is no degree program within SER.

Questioned on the specifics on the impact of the Hathaway and enrollment, Dr. Kouris indicated that currently the department is at capacity. That quality will remain the focus vs. quantity which must be balanced with the how faculty positions are created. This led to a discussion on how faculty is hired and the central position management pool (CPM). How the CPM currently works and how SER may provide an opportunity to add positions (lines) to Mechanical Engineering. The board may have an impact on this area as well as NCAR with the legislature in the future.

The discussion then turned to the status of UW, a board member stated that UW Engineering College was once high on a listing of school rankings. This led to a review of the tools currently available to rank programs and other reviews UW is ranked in. It was indicated that in the Princeton review we do well. In value based surveys, UW ranks well (i.e., the recent UW student survey). Finally, as a measure of quality our faculty is very competitive with other tier 1 universities.

This led to a discussion on two topics - the graduate programs and graduate applicant pools. Dr. Kouris indicated that the BSMS program has helped. It was noted by the board that graduate enrollment has increased significantly since 2000.

He briefly addressed the distribution of grants in Mechanical Engineering. That ME faculty have a high percentage of competitive grant award and a good ratio between number of proposal and number successful proposals.

Dr. Kouris indicated that next year the board may need to be prepared for two meetings in preparation for the ABET certification and looking at ways to improve the quality of the Graduate Program.

Old Business

Reports by Board Committee

Alumni Advocacy Group - Don Slaughterbeck reviewed last fall's Alumni event. It had a very limited response for the effort required in generated invitations and individual contacts to alumni. Discussion was on in the future using the Homecoming weekend as providing the purpose for meeting or gathering. It was decided that although limited in response it would be a good opportunity for alumni to showcase the UW Engineering program for their children and grandchildren.

Internship Opportunity - Patrick Shea provided to the EAB a listing of various companies with contact information. Suggest that EAB members willing to or knowing of internship opportunities in their workplaces provide that information to Brittany Fain to up-date for the next meeting.

ABET - Dr. Dennis Coon gave a presentation on the "stoplight chart" used to self-assess the department in preparation for the 2009 review. It included a discussion on the current issues and the resolution in progress or completed. The board would like a description of how the self-assessment process works prior to the next meeting. This process will help them in their review of Mechanical Engineering preparedness prior to the 2009 review.

Committee for Energy and Mechanical Engineering – tabled

Website/Visibility – Dan Kohlhaas presented some suggestions to improve the visibility of UW on the web (see appendix 13).

2006 Recommendations for Mechanical Engineering

The board began their review of the 2006 recommendations.

Recommendation 1, Historical Program Outcomes: The board was provided with a table with the semester to graduation rate for undergraduate students (see appendix 4).

Recommendation 2, Report on Student Enrollment Data: The board received a listing of student status from 2000-2007 (see appendix 3). This data included class sizes and a gender breakdown. The board was pleased that they had information to start looking at retention rates for specific groups (i.e., freshman and women).

Recommendation 3, Addition of Activities to Attract Undergraduate Students: The board recognized from the previous discussion on the 'State of Mechanical Engineering' that current enrollment level do not require any additional activities to attract undergraduate students.

Recommendation 4, Addition of Activities to Attract Graduate Students: Mechanical Engineering has begun visiting schools and inviting speakers from other schools to UW in the hopes of establishing a liaison. It has had limited success since all graduate school are attempting to attract the same pool of applicants. Also, the stipend for graduate students needs to be made more competitive to help attract the 'well qualified' applicants.

Recommendation 5, Extend Student Term to 2 Years: The board noted that Brittany Fain has joined the EAB, so in the future there will be two student members with overlapping terms.

Action items from the April 2006 meeting were reviewed and determined to be completed.

At this time the floor was opened to discussion on any old business items.

The first item discussed was the question about the possibility of speakers being found for the senior design project to help with the communication issues. This includes the

development of the ideas of quality assurance, quality management, geo/tolerance, cost effectiveness and ethnics.

The second item discussed was the 2006 proposal for a new pilot program to introduce 6th graders to Engineering. Several issues were discussed were several including identifying a school, interested teacher, and an engineer to teach the program. The discussion then moved to if this is the appropriate age group. The discussion concluded with Dr. Kouris recommending that if the board is interested in the project to use available resources. He gave them the names of Dr. Jerry Hamann & Dennis Coon who are currently involved in the College of Engineering outreach to Wyoming students.

New Business:

The first item of new business was how to organize alumni into a departmental advocate association. This item was tabled per Dr. Kouris.

The second item of new business was strengthening the graduate program, including scholarships. Current funding levels and available supplemental funding (i.e., Marino funds) to augment existing scholarships were discussed as a mechanism to enhance recruitment of well-qualified students (women and US citizens). Strengthening and increasing scholarship was determined to be the responsibility of the College Development Office. Dr. Douglas Smith was introduced as the new Graduate program coordinator. He discussed the need for a more money to improve the number and qualification of the applicant pools.

The third agenda item was producing new interactions with the Life Sciences. The most promising is with Biological Sciences and the changes in the study of biological functions as a mechanical process. With future collaborative faculty in an endowed position it may improve the number of women applicants.

Discussion then moved to the recognition of Mechanical Engineering professionalism in the National Academy of Engineer (NAE) Members.

The next item was appeal of ME Dept due to success of Prior Graduates (see appendix 14). To enhance the appeal of the Mechanical Engineering Department the EAB has recommended the identification of a number of 'notable' gradates to be included in departmental web pages, publications, mailing, etc.

The board then discussed web page search engine visibility. After a review of the handout of this item (see appendix 15) it was decided to the best approach was to provide the College IT manager with the information.

The discussion moved to the Mechanical Design 3D/4D/5D Research Topic (see appendix 16). This is a suggested integrated cooperative approach with other engineering disciplines in advanced integrated construction 4D technologies. Board members will possibly be of help in the establishment of cooperative agreements with industry.

The meeting was then opened up to additional new business.

A discussion was started on the Internship Listing. The members were asked to be proactive in producing a list of contacts to be given to the student members to be included on the web site.

Increasing visibility moved to a review of recruitment material (see appendix 7 or 8?) prepared by Dr. Paul Dellenback and his efforts as the undergraduate coordinator.

Professional practice was discussed in the scope of the preparation of high school student and engineering students to think critically and preparation for the real world situations. The discussion led toward a proposal for a seminar proposal for undergraduates. The members of the board volunteered to present a seminar during within the Senior Design project.

The meeting adjourned for the day.

April 28, 2007

The meeting was convened at 8:00 by Chair Burns

The meeting began with commendations from the Advisory Board.

Commendations include:

- The department and faculty of Mechanical Engineering should be commended on their activities.
- The faculty should be commended for the quality and diversity of their research.
- The new programs (BSMS, PhysME, and Plan B) have been established and currently have students pursuing these degree plans.
- Dr. Dennis Coon and the department should be recognized for their continuing work in ABET preparation including an effective self-assessment.
- The department is recognized for their efforts to improve data collection on student information.
- The continued success of the EAB
- The efforts of Dr. Marvriplis and the liaisons he established with NCAR which have resulted in the selection of Wyoming as the new supercomputer center.
- Improvements in recruitment and retention of students by Dr. Paul Dellenback.

Recommendations include:

- The College of Engineering consider hosting a career day just for engineers students.
- A document that describes the ABET self-assessment process be prepared for the next meeting. The Board would like to see a strategy document on how the process will be used in preparing for and communicating with ABET.
- The Department identify notable ME graduates and place this information on the web page and in publications for use in recruiting new students.
- The EAB recommends that the Department use the Web Page Search Engine Visibility information provided by the board to improve the visibility of the Mechanical Engineering Department on the Web.
- The Department should consider an integrated team approach with other engineering disciplines (Civil, Electrical, and Computer Science Departments) to research advancing integrated construction 4D technology, including adding the 5th dimension, cost.
- Continue efforts to stress critical thinking to help better prepare graduates for careers in engineering.
- Create within the Senior Design sequence a seminar to provide coverage of topics like risk management, quality assessment, root cause assessment, geometric dimensioning and tolerancing, cost effectiveness and ethics.

- The department works with the Development Office in developing additional scholarship funds to enhance existing scholarships.

Agenda items for 2008 meeting:

1. Is there a mechanism to quantify the relationship between quality and number of graduate students and improvements in the undergraduate program from this relationship?
2. The Board would like to see a strategy document on how the process will be used in preparing for and communicating with ABET and to prepare the EAB for the next ABET cycle, Fall of 2009.
3. Visit with the new College of Engineering Dean to hear about their priorities for the College.
4. Review the status of the School of Energy Resources and possibly meet with the new director.
5. Present updated statistical information including an overview of all retention rates.

Board Action Items (to be completed by May 30, 2007)

1. Board members will provide to the department the names of 'notable' graduates to be considered for inclusion on the departmental web site and in publications
2. Board members will give Brittany Fain and Patrick Shea information on internships with point of contacts information.
3. Annette Lynch will provide the ASME Fellows to the department to permit a review for graduates of the University of Wyoming, Engineering College.
4. Brittany Fain will research NAE for graduates of the University of Wyoming, Engineering College.
5. Don Boyer will draft a document on suggestions for Department involvement in renewable energy initiatives.

Board Requests to the Department

1. The EAB requests information necessary to access ABET related material over the Internet.
2. Provide the EAB with a document that describes the ABET self-assessment process be prepared for the next meeting. This should also include a review of all 6 ABET outcomes..
3. Confirm the schedule for the Spring 2008 meeting. Select a possible date for the Fall 2008 meeting.

Discussing changing the meeting schedule did not seem to be a reasonable solution for EAB members who often judge for the Undergraduate Design Day.

Meeting was then opened to discussion on a variety of issues:
Topics discussed included:

- Determining ways to attract well-qualified graduate students and American born students by offering more attractive scholarships. Need to attract more US born graduate students, female students and faculty.
- Life Science in Mechanical Engineering: The board supports an effort to hire a member in cooperation with Biology in the area of BioMaterials; the board endorses this effort.
- Discussed a memorial opportunity in honor of Professor Armstrong.
- Look at how make UW academics a highly recognized academics program by NAE/NAS memberships?
- Active aero will remain deeply affected with the loss of the airplane and leadership for this program.
- A discussion on funding good PhD students: find funding to enhance the minimal stipend for good candidates. Additional funding of about \$13k per student would be useful. It was decided that fund-raising is not a function of the EAB. We could endorse a statement by the Department that could be taken to the President to aid in funding PhD students.
- Increasing lines of CPM and faculty lines is difficult to justify. Discussion was on what the EAB can do, EAB considered approaching the state legislature on the impact Mechanical Engineering has on energy and NCAR.
- Encourage collaboration between NCAR and non-fossil energy sources (i.e., wind Energy etc).
- Could new lines of Department staffing be added through endowed positions and with NCAR or other campus departments?
- The EAB discussed energy issues related to Wyoming as a region. The EAB will continue to review this issue in conjunction with the Mechanical Engineering Department. The EAB should consider making a presentation to a legislator on a program on energy, especially a renewable source. This will be discussed again after the new SER director is selected. The EAB decided to wait until the new SER director is selected and the board is aware of their focus and background

Next Meeting

Will the next EAB meeting be May 2-3, 2008?

The meeting adjourned for the day.

Respectfully submitted by Gale Bandsma 5/2/2007.