Engineering Physics Advisory Board Meeting Notes

Friday, April 25, 2008

Notes taken by Michael DeAntonio, Gary Kyle and Elena Fernandez

8:30 am Welcome and Introduction – Tom Hearn

Points of discussion

- Position in engineering requires engineering accreditation for employment
- Many in industry do not understand engineering physics
- Currently we have 20 EP students
- Last year we had 14 students in EP
- One EP student is currently in a Nuclear Engineering graduate program
- Kanani Lee will be moving to Yale University next year
- New faculty member in Physics Education (spilt position with Curriculum and Instruction)
- More physics and EP physics students than anytime in the past 20 years (thanks to Elena Fernandez efforts in recruiting)
- About $1.5-1.8 million in research expenditure
- Possible Lunar Lander for the new building

Question/answer

- John Haas – How are the space requirements affecting the EP and physics programs as they grow and what are we doing to prevent problems? (We have had a recent survey of space. Criminal Justice and other larger programs are squeezing out Geology. We believe that the university will find the space we need even if it is outside the building. PSL is shrinking and we may get lab space in their building. The university is looking to expand current building and maybe some new buildings but money is a key factor.)
- Jim McNeil – Does the university have a plan for growth? (University is trying to increase enrollment – which is expected by the state for growth funding. HS graduation rates are decreasing whereas enrollment in college is increasing.)
- Jim McNeil – The University seems to be shortsighted. What fraction of the student population is physics and engineering physics? (We are less than 1%. CJ, English, Art etc. are much larger and also growing. If we look at student numbers, we should be smaller, but research requires mores space. University uses student credit hours per sq ft as a measurement and says we are inefficiently using space. They also do the same with faculty positions. We are losing faculty positions because of this.)

- Mark Schraad - Is their a tuition split between A&S and Engineering as requested last year? (No. We are in flux as far as the dean's position and we are waiting for a new dean to work this out.)
- John Haas – Is the university focusing on medical as the state is expected? (This push is benefiting other departments like nursing. We are trying to tap into the need for teachers in the state.)

Upcoming Changes in EE Curriculum – Paul Furth

Points of discussion

- About 50/50 EE/ME EP majors
- Note the Pre-requisite of physics 216 for EE 280
- Matlab used to be used and never taught, but is now taught in EE 210
- Control systems (EE341) is now an elective
- Upper division courses listed here are just changes in the number
- EP students are not required to take Engineering Management (EE410) – It is being added as a coreq for the Capstone
- Overlay the flowcharts to more easily see the changes that have been made
- EE recommends that the EE math classes should be added to EP and that we should take out terminal courses (this takes away math classes and will make it harder to get a math minor or supplemental math major)
- Power engineering is on the EE core and not on the new EE-EP program
- EE 410 is in addition to Econ 265
- Possible resurrection of the EE101 class – we should not need this

Question/answer

- John Shaub – What does EE 410 add to Econ 265? (We do not know but these are very important skills. Econ 265 is a management course. Students must be aware of management importance but does not need a thorough training in management.)

Accreditation Issues – Gary Kyle

Points of discussion

- Design abilities was discussed by the reviewer as an area that we need to do better
- Design abilities is being added as an outcome for the labs
- Outcome Assessment Summary Sheets are done for each class and reported in the faculty retreat
- Mike DeAntonio offered an electrical engineering capstone in the fall of 2007

- We would like ideas from the advisory board on how we can feed the alumni surveys back into the outcomes
- We could feedback to other departments when the Gen Ed and Viewing the Wider World courses are not respected by the students
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Question/answer

- Jim McNeil – Who was the reviewer? (Reviewer from McNeese State University in Louisiana)
- John Haas – Who is responsible for overall evaluation? (he EP committee is responsible to pull together the overall assessment)
- Jim McNeil – Why are there not more outcomes associated with the Capstone? (The EP outcomes are focused on the physics classes so we have more control over them. The necessities for engineering may not be the same as those for engineering physics.)
- John Haas – Are other universities facing the same issues with Gen Ed requirements? (Jim McNeil says that their ABET programs are exempt but others are not)
- John Haas – How would students react to more classes? (McNeil says that students want more training but not more classes. Mark Schraad says that he sees some students may want to extend their time. Should we be asking students what they think? Extending to 5 year MS seems to be accepted by physics students but not so much EP.)
- Are undergraduate engineering students typically highly motivated to get done in 4 years? (Marcela Salmon- make sure you get coop and internship from company recruiters. Students feel they have to finish in 4 years but learn this is not the case because of importance of internships and coops. Heinz Nakotte-Matt Humberstone finished in 4 years and other that take longer because they want to take more courses.)
- Jim McNeil- recruiting focal point is in Junior year
- Mark Schraad- lack of focus with students who take so many different courses?
- William Owens- Do you track average starting salary of students? (Elena- question on alumni survey is optional)
- John Schaub- didn't want to take more classes. Wanted classes to be a little more different. 315 and advanced lab are different from when he took them and those changes answers some of John's issues.
- Kyle- most recent comments were most positive.
- McNeil- How well prepared are EP students?
- Schraad- Are General Education Requirements passed on from state communicated to students? Do they know why they are taking them? (Haas- Student at lunch last year knew they were requested but they think institution is the problem and they don't like the general education requirements.)

- Schraad- I am impressed with all of the information available to board. Is it motivation based on accreditation? Do the faculty Buy-In?
- Haas – Has the formal procedure of Outcomes Measures actually improved the program? (Kyle – sometimes a little difficult to get the documentation for each course.)
- McNeill – statistics in survey? Since it is only from 4 responses. Assessment in not the same thing.
- McNeill – addendum or re-write to address weakness and concern to ABET? Get in contact with the ABET evaluator to clarify what should be done.

Student Recruitment, Advising and Retention – Heinz Nakotte and Elena Fernandez

Points of discussion

- Marcella – when visiting a school
  - must first convince students to go to college
  - Few want to be engineers or know what they do – requires education
  - Get info out to the public
- Jeff – Do you make use of professional organizations; have practicing engineers explain what they do?
  - Marcella – no, but it is good idea
  - Are using alums
  - Ambassadors (students) $300 scholarship after 30 hrs participation, meet potential employers.
- Heinz
  - Faculty are overcommitted, resources limited
  - Mark – combine forces with the labs? E.g. science fairs
    - Heinz Nakotte - previous Board suggested recruiting from cold places – problem is lack of manpower
    - Mark – arm lab folks who attend with brochures
    - Marcella – HS presentation 1hr/year would be big help

Curriculum Issues – Stephen Pate

Points of discussion

- Students see many disadvantages to the degree (they see themselves as engineers but not “engineers”). We need to get the word out. Jim McNeil said this took five years for CSM to do this with their local industries. They did this in the job fairs.
- Should we compromise on course content to keep some of the “physics” type courses here in physics?

- The students unanimously have difficulty with navigating the flowcharts. This seems to indicate that we need to examine our advising principles. John Schaub would like to see the advising be more aggressive.
- Students also want to do coops and internships. They need clear advice on how to proceed.
- Many of the difficulties students are having are there own fault.
- Time conflicts seem to be a problem.
- Board recommends a freshman/sophomore orientation and possibly group advising.
- We might also do an interactive web-based advisor.
- Career counseling needs to be improved. They feel left alone in the process.

Question/answer

- Mark – these look like easy fits
- Jim – issue of teaching courses like E&M in EE (more applied) rather than physics
    - Steve – issues of credit hour limit and Eng pre-reqs
        - Matter of negotiation which has gone both ways
        - Compromises required
- Mark – AE might illustrate both Lagrangian and Eulerian viewpoints
- John – ME mechanics was sufficient prep for grad school, thermo was not due to lack of statistical viewpoint
- Steve – new gen ed requirements have driven
- John Haas – Is the argument over crossover courses about credit hours or content? (Mostly content. Engineering already has fewer credit hours. We need to discuss mechanics with ME about the fact that it is taught only every five years.)

Open Meetings with Students/Faculty

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- The students unanimously have difficulty with navigating the flowcharts. This seems to indicate that we need to examine our advising principles. John Schaub would like to see the advising be more aggressive.
- Students also want to do coops and internships. They need clear advice on how to proceed.
- Many of the difficulties students are having are there own fault.
- Time conflicts seem to be a problem.
- One suggestion is holding a freshman/sophomore orientation and possibly group advising.
- We might also do an interactive web-based advisor.
- Career counseling needs to be improved. They feel left alone in the process.

- Most feel most comfortable as a part of physics. They felt that engineering did not recognize them. How do we get engineering to job counsel?
- The students need to know that they ARE engineers AND physicists.
- Aerospace would be an excellent candidate for a 5 year program.
- Aerospace Engineering was a mandate of the state of NM.
- We should try to get physics and EP as 5% of the engineering enrollment.