August 11, 2008

Prof. Gary Kyle
Engineering Physics Program Director
Department of Physics
MSC 3D
PO Box 30001
New Mexico State University, 88003

Dear Prof. Kyle:

Thank you for taking the time to meet with the external Advisory Board of the Engineering Physics Program at New Mexico State University. The dedication shown to the program by the Faculty is evident, appreciated, and essential for the continued success of the program. The Advisory Board is pleased to see the growth of the program both in its quality of education and in the number of students it is attracting. Accompanying this letter you'll find the report from the board's visit of April 25th, 2008.

We look forward to the continued success of the program.

Sincerely,

Mark Schraad
Chair-Elect, Engineering Physics Advisory Board
Leader, Fluid Dynamics Group
Theoretical Division
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop B216
Los Alamos, New Mexico 87545

2008 Engineering Physics Advisory Board Membership:

Mr. Jon Haas, NASA Johnson Space Center, White Sands Test Facility, Las Cruces, NM
Dr. James A. McNeil, Professor of Physics, Colorado School of Mines, Golden, CO
Dr. William Owens, Advanced Programs, Raytheon Corp., Tucson, AZ;
Mr. Jeffery Rienstra, Systems Engineer, Sandia National Laboratory, Albuquerque, NM
Mr. John Schaub (B.S.E.P. NMSU 2004)
Dr. Mark W. Schraad, Group Leader, Fluid Dynamics, Los Alamos National Laboratory, Los Alamos, NM
Mr. Ronald Tafoya, Senior Software Engineer, Digital Health Group, Intel Corporation, Albuquerque, NM

Report of the Engineering Physics Program Advisory Board May 2008

The Engineering Physics External Advisory Board (EPEAB) met for the fifth time on Friday April 25th, 2008, in Gardiner Hall on the NMSU Main Campus in Las Cruces, New Mexico. In attendance for the EPEAB were: Mr. Jon Haas (Chair), NASA Johnson Space Center, White Sands Test Facility, Las Cruces, NM; Mr. John Schaub (B.S.E.P. NMSU 2004); Dr. William Owens, Advanced Programs, Raytheon Corp., Tucson, AZ; Dr. Mark W. Schraad, (Chair-Elect) Group Leader, Fluid Dynamics, Los Alamos National Laboratory, Los Alamos, NM; Dr. James A. McNeil, Professor, Physics Department, Colorado School of Mines, Golden, CO; Mr. Jeffery Rienstra, Systems Engineer, Sandia National Laboratory, Albuquerque, NM; Mr. Ronald Tafoya, Senior Software Engineer, Digital Health Group, Intel Corporation, Albuquerque, NM attended via teleconference.

The Board would like to congratulate the program on its successful ABET site visit and accreditation. One concern was noted, addressing capstone course compliance with criterion 4. It appears as if this is being addressed satisfactorily by the program's faculty. The only weakness noted during the accreditation visit was a technicality and will expire as the program generates more graduates.

The primary function of the board is to represent the constituencies served by the program, and provide feedback to the program. In this respect, the board feels that the current membership does represent those served most directly by graduates of the program.

The Board's findings for 2008 can be broken down into three categories:
Positives – Those aspects of the program that are strengths to be built upon or other aspects of the program that are mature or maturing at a healthy rate.
Needs – Those aspects of the program which will benefit from additional attention.
Observations – Those aspects or features that may represent potential problems or opportunities, but do not currently represent material strengths or weaknesses.

Positives

- Despite a nation-wide trend reducing the number students entering science and engineering majors, the EP program is experiencing growth. This is a repeat from 2007 and is evidence of a growing quality program. The emphasis placed on recruiting is evident as well as the enthusiasm and strategic planning of the recruiters and the overall success of the effort.
- The Program Objectives and Outcomes continue to reflect the needs of the constituencies served
- Coordination between the Physics Department and the Engineering College is essential to the continued success of the program. The EP Program Committee is positively addressing normal changes in the Physics and Engineering curricula and examining the program to ensure that it remains current and reflects modern trends. The faculty is aware of the effect of changes in one college affecting the program and courses in the other. It is likely that this type of change will continue and the faculty needs to remain vigilant in this respect.
- Strong marketing of the EP program is evident by the engineering college.

- The new track options (Aeronautical Engineering, Chemical Engineering) are seen as a positive for the program's future. It is recommended that the Program leverage the State of New Mexico's direction to expand aerospace technology and education opportunities for the betterment of the program when establishing the Aerospace Engineering Physics track.

Needs

- There is a lack of connection between the university administration's vision for growth and the allocation of resources and space. This is seen as a potential threat to the fledgling EP program (and possibly to other core subject programs). A strategic plan should set goals and plan how those goals, if met, are to be supported and integrated. This is particularly evident when one attempts to align planned enrollment growth with planned physical growth and associated space allocation for the same time period.
- The students are not getting as much guidance and attention during the terminal phases of their program as during the recruitment phase. Some students may be missing opportunities for scholarships, co-op, internship or other practical work experiences during their undergraduate years, and there seems to be a lack of post graduation planning guidance. The Engineering college appears to have many opportunities for such experience that are not being effectively communicated to the EP students, who (reported this year that they) feel more at home in the Physics Department. The Engineering faculty could more fully engage and support this program and its students.
- Some students expressed uncertainty about whether or not they are earning an engineering degree through the EP program, and many of them perceived graduate school as the only opportunity available to them after earning their undergraduate degree. As stated in the undergraduate catalog, the BS in Engineering Physics confers an engineering credential. Making this fact clear to the students and potential employers may open up employment opportunities for those who wish to enter the workforce directly.
- Students feel less well advised through the complex matrix of courses necessary to complete their degrees in the shortest time possible. While it is acknowledged that students must take much of the responsibility themselves, the EP tracks are complex and students would benefit from more faculty and structured peer-to-peer advising. The board heard several stories of students not understanding the effect of a course choice on opportunities several semesters down the road. An informal peer advisor program or similar could alleviate this issue.
- (carried from the 2006 and 2007 reports) Though the faculty and administrators of both colleges have done well in establishing the program and have worked productively to bridge cross-college difficulties, the ultimate success of the program will depend on a permanent program structure becoming institutionalized thus eliminating any reliance on agreements or individuals to make decisions and resolve disputes.
- (carried from the 2006 and 2007 reports) The EP skill set is still not widely understood by many employers or well-enough appreciated by university career placement offices. The board suggests working with your placement office to engage them in promoting the benefits of the EP skill set as well as educating

potential employers thereby encouraging them to include EP graduates in their recruitment pool.

- The board remains concerned over the potential negative impact to core EP skills from increased university non-core course requirements combined with a potential (university-wide) reduced limit on credit hours for majors. Both colleges should well consider the negative effect of blanket university policies on those rigorous technical disciplines attracting the best-prepared and most-motivated students.

Observations (The first item is carried from the 2007 report.)

- The board remains concerned over the level of resources available to the EP program from the college of Arts and Sciences.
- The growing EP program may face space challenges as the Physics Department loses floor space with the renovation and realignment of Gardiner Hall. Normally, a major building renovation is welcome news for an academic program. However, the university plan for reallocating space to another program following the renovation of Gardiner Hall is, in the board's view, misguided. If carried out, space will likely become the significant limiting factor to the continued future growth of the program.