

Report of the Engineering Physics Program Advisory Board April, 2007

The Engineering Physics Advisory Board (EPAB) met for the fourth time on Friday April 13th, 2007, in Gardiner Hall on the NMSU Main Campus in Las Cruces, New Mexico. In attendance for the EPAB were: Mr. Jon Haas (Chair), NASA Johnson Space Center, White Sands Test Facility, Las Cruces, NM; Mr. Matt Humberstone (B.S.E.P. NMSU 2005) Graduate Student, Nuclear Engineering, University of Tennessee, Knoxville, TN; Dr. Jon N. Leonard, Deputy Director, Advanced Technology Directorate, Raytheon Missile Systems, Tucson, AZ; 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. Unable to attend were: Mr. Joe Alvarez, President, EMI Technologies, Las Cruces, NM; Dr. James A. McNeil, Professor and Head of the Physics Department, Colorado School of Mines, Golden, CO; Mr. Vincent Salazar, Senior Manager, Sensors and Information Technologies, Sandia National Laboratories, Albuquerque, NM; Dr. Robert Sanderson, High Technology Consortium of Southern New Mexico, Las Cruces, NM. Also, Dr. Frank Adessio, Mr. John Schaub and Dr. James Small have resigned from the board.

The Board was informed of the ABET accreditation evaluation visit in October, 2006. Though the outcome is pending (decision expected in September, 2007), the Department of Physics Head, Professor Thomas Hearn, portrayed the visit as positive. The reviewer left only a few constructive comments. At this time, the indication is that ABET accreditation will proceed. The program should be congratulated for its diligent work.

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 choice of members does represent those served most directly by graduates of the program. As such, the board strongly endorses the concept of an Engineering Physics curriculum based in the rigors and fundamentals of engineering and physics. The work in today's high-tech world is increasingly characterized by challenges which are simultaneously broadening in scope, and deepening in fundamentals. Today's industrial and government laboratories have a strong need for individuals skilled in the fundamentals of science and engineering and who possess computational and simulation skills as well as an ability for systems engineering and integration. The Engineering-Physics student is significantly advantaged to meet those challenges and emerge as an innovator and leader.

The Board's findings for 2007 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.

- Faculty commitment is broadly evident: Though some professors initially indicated reluctance at the increased workload to manage EP courses in the prescribed manner (i.e. notebooks, feedback loops, etc.), the same faculty now speak positively about the improvement in student education resulting from the process.
- The quality of the ABET Self Study Report and organized condition of program and course materials clearly represents a significant effort on the part of dedicated faculty from both colleges.
- The Outcomes and Program Objectives appear reflective of constituent needs.
- The Outcomes are reflected in the Physics and Engineering curricula.
- The students who met with the board had very positive comments about the quality of instruction they are receiving; they feel “at home” in both colleges.
- Strong marketing of the program was evident by the engineering college.
- Students displayed an understanding of the program objectives and intended outcomes.
- Student advising (from the BSEP advisor) appears strong and well organized.

Needs

- (carried from the 2006 report) 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 report) The EP skill set is still not widely understood by many employers or well-enough appreciated by university career placement offices. Consider working with your placement office to engage them in promoting the advantage of the EP skill set.
- (carried from the 2006 report) The program descriptions (e.g. university catalog, literature website, etc...) should prominently display the programs objectives (though improvement was noted in web materials describing the program, the university catalog still does not describe the program objectives).
- There is a growing concern over the potential 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

- Concern remains over the level of resources available to the EP program from the college of Arts and Sciences.
- The growing program may face a challenge as the Physics Department loses floor space with the renovation and realignment of Gardiner Hall.