

## **2006-1451: PROGRESS OF THE ASEE ACCREDITATION ACTIVITIES COMMITTEE (ASEE/AAC)**

### **Joan Gosink, Colorado School of Mines**

Joan Gosink is an Emerita Professor and former Director of the Engineering Division at CSM, the largest department or division in the School. Under her direction, the Division received various accolades, including designation as a Program of Excellence from the Colorado Commission on Higher Education. The program also expanded to include Masters and Doctorate degrees and an undergraduate specialty in environmental engineering. Dr. Gosink twice served as a Program Director at NSF, and is an experienced ABET evaluator.

### **Sherra Kerns, Franklin W. Olin College of Engineering**

Sherra Kerns is Vice President for Innovation and Research at the new Franklin W. Olin College of Engineering. She is the Immediate-Past President of ASEE, a member of the Engineering Accreditation Commission of ABET and an incoming member of the ABET Board of Directors. She is a Fellow of the IEEE and a Fellow of ASEE.

### **John Weese, Texas A&M University**

John A. Weese retired as a Regents Professor of Professor at Texas A&M. His BSME is from Kansas State University and his PhD is from Cornell. He held positions at the University of Denver, Old Dominion University, and the USAF Academy. He has worked for Allis Chalmers, Boeing, and Martin Marietta and was an NSF division director. Weese was ASEE's 1999-2000 president.

### **Edwin Jones, Iowa State University**

Edwin C. Jones, Jr. was born in West Virginia, and earned a BSEE from West Virginia University in 1955, a Diploma of the Imperial College (DIC) from the University of London in 1956, and a PhD in Electrical Engineering from the University of Illinois in 1962. He has industrial/government experience with the General Electric Company, the Westinghouse Electric Company, and the U S Army Signal Corps. He served on the faculty at the University of Illinois from 1962 until 1966. He then served on the faculty at Iowa State University from 1966 until 2001, and was named University Professor Emeritus of Electrical and Computer Engineering. During this period he also served as Director of Engineering Distance Education and as Associate Department Chair. He is a Fellow of IEEE (citation "for contributions to engineering education"), ASEE, AAAS, and ABET. In 2001, he was awarded the Linton E. Grinter Distinguished Service Award from ABET.

## Progress of the ASEE Accreditation Activities Committee (ASEE/AAC)

### Introduction

Programs in General Engineering, Engineering, Engineering Physics, Engineering Science and Engineering Technology have in the past been designated “non-traditional” by ABET. These programs lacked formal affiliation with specific professional societies for accreditation purposes<sup>1</sup>. Consequently, the ABET Engineering Accreditation Commission (EAC) and the Technology Accreditation Commission (TAC) assigned Program Evaluators (PEVs) from diverse disciplines, usually according to the “specialties” or “areas of emphasis” identified by each program. In most cases, the assigned PEVs understood the unique features of the non-traditional programs and proficiently completed the ABET evaluations. Still, each of these evaluators had been trained for evaluations of programs in specific disciplines and such exceptional visits required that they suspend their experienced judgment and discipline-specific preferences during their assignments. Thus faculty and administrators in several “non-traditional” programs expressed dissatisfaction with program evaluations, especially in terms of PEV knowledge and experience. This dissatisfaction was one factor that led to an interest in the establishment of formal affiliations with appropriate professional groups for accreditation processes. Another important factor is that the negative definition “non-traditional” did not adequately describe the programs, which led the participants in such programs to request the designation “multidisciplinary.”

Development of outcomes-based criteria in the 1990s underscored the lack of society representation of such programs. The programs lacked formal representation in discussions regarding all aspects of the EC 2000<sup>1</sup> criteria. The non-traditional programs clearly needed an effective and responsive voice in the establishment of their own criteria and requirements. Without this voice, the non-traditional programs could be subject to external judgments and mandates.

### Development of Interest in ASEE as a Lead Society

The origin of the idea to have ASEE seek designation as “Lead Society” for these multidisciplinary programs is not clear, but it certainly was suggested in the late 1990s if not before. For a while, there was little if any interest. Then, two entities concurrently proposed the establishment of the ASEE as lead society for multidisciplinary programs: the ASEE President and Board and the Multidisciplinary Engineering Constituent Committee.

#### *1) ASEE Leadership*

ASEE is the largest engineering society in the world to include representatives from all engineering disciplines. The society’s activities, focused on improving engineering and engineering technology education, involve exchange of best practices across the corporate and academic sectors both nationally and internationally. ASEE members actively seek a voice in activities influencing excellence in educational practice. The society is a Charter Member of

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<sup>1</sup> Such affiliation is known as “Lead Society” representation within ABET.

ABET, with representatives on the ABET Board and its Engineering and Technology Accreditation Commissions. Still, ASEE has not previously represented specific programs nor assigned program evaluators. In 2003 began the most recent round of Board-level discussions on these issues, leading to a formal proposal to the ABET Board for ASEE Lead Society status and an increase in formal responsibilities of the ASEE Accreditation Activities Committee.

## 2) *Multidisciplinary Engineering Constituent Committee (MECC)*

The Multidisciplinary Engineering Constituent Committee, later to become the Multidisciplinary Engineering Division, was established in 2003. The purpose of the MECC is "... the promotion and development of multidisciplinary Engineering education, and shall be consistent with the purpose of the Society as stated in Article I Section 2 of the constitution of ASEE". Founding members of this Committee consist largely of faculty from the (formerly) non-traditional programs. These individuals strongly supported the establishment of ASEE as Lead Society for programs in engineering, general engineering, engineering technology, engineering science and engineering physics for ABET processes. Indeed, this goal was one of the objectives that motivated the initiation of the MECC. Another important goal was to increase service to the ASEE membership.

## Establishment of the Lead Society Status and the AAC

At a board meeting during the 2004 ASEE Annual Conference and Exposition, ASEE officers approved the proposal to ABET for Lead Society status for the programs represented as multidisciplinary engineering, engineering physics and engineering technology. In October 2004 ASEE officers brought the recommendation to ABET for discussion and approval. ABET requested further information, particularly regarding the opinions of the individual programs to be represented. The MECC sent out a request for letters of support to department heads and coordinators of such programs, and their response was unequivocally positive, with more than half responding. With this evidence, ABET gave formal approval to the initiative in early 2005. Implementation of the lead society status then required the formation of a working committee to develop procedures for evaluation of the multidisciplinary programs. This committee was established in early 2005, under the authority of the Accreditation Activities Committee (AAC)<sup>ii</sup>. Membership of the AAC is provided in Appendix 1. The ASEE President and Board of Directors selected AAC members so as to include representation from ASEE, people with substantial ABET experience, and the three affected divisions, Multidisciplinary Engineering, Engineering Physics, and Engineering Technology.

## Mission of the AAC

The AAC serves the ASEE in its efforts to establish a fair, responsive, and thoughtful evaluation procedure for the multidisciplinary programs. It has as its primary mission the selection and training of ABET Program Evaluators (PEVs), and the development and functioning of the procedures for evaluation. Thus, with approval of the ASEE President and Board of Directors, the AAC has established qualifications for PEVs and for vetting the candidates. The AAC also acts as a liaison among the three constituencies: ASEE leadership, ABET, and the programs. In

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<sup>ii</sup> The Accreditation Activities Committee had formerly existed as an ad hoc committee within ASEE with the responsibilities to nominate prospective representatives to the EAC and TAC. These responsibilities have expanded considerably with the advent of Lead Society status.

order to fulfill this obligation, the AAC recommends to the ASEE president candidates to serve as ASEE representatives to the ABET Board of Directors and to the Commissions, and proposes initiatives for the ASEE Board to communicate to the ABET Board. A full listing of the AAC Charge can be found in Appendix 2.

The first meeting of the newly charged AAC took place June 15, 2005, at the ASEE Annual Conference and Exposition. Agreement was reached regarding the Committee Charge, and the establishment of a process for qualifying and training PEVs. Both of these activities were initiated during fall/winter 2005.

### Qualifications and Applications for PEVs

The first accomplishment of the newly charged AAC was the development of an application process for PEVs. This process includes a nomination step to aid in the selection process. Nominators are required to provide their name, title and affiliation, as well as a recommendation for the candidate. There are ten qualifications for PEVs:

1. be a member or fellow of the ASEE, except that an employee of a corporate member of ASEE may be selected as a program evaluator. The President of the ASEE, upon recommendation of the chair of the ASEE/AAC, may waive this requirement in individual cases.
2. have a minimum of ten (10) years of academic, business, or government experience in engineering or engineering technology.
3. have appropriate technical competence;
4. have current familiarity with and interest in programs for which ASEE is the lead society in the United States; and be a citizen or permanent resident of the United States;
5. have analytical ability, communication skills, and personal maturity commensurate with the requirements of an evaluator's assignments;
6. be sensitive to the needs and potentialities of women and minorities with respect to engineering and engineering technology education and the associated professions;
7. have formal education to the master's degree level or the Ph.D. level, or recognized distinction in the practice of engineering and/or engineering technology;
8. have a stated willingness and ability to accept a six year appointment as an evaluator and attend, without reimbursement of expenses by the ASEE, a training workshop using the EAC or TAC materials and supplemented by appropriate ASEE materials;
9. have a stated willingness and ability to conduct visits and all associated activities in accordance with the requirements, established by ABET and the ASEE through the

ASEEAAC, governing accreditation visits, including absence of impeding conflicts of interest, as defined by ABET; and

10. in the case of an academic nominee/applicant, be associated with an EAC or TAC of ABET accredited engineering or engineering technology program or have had substantial involvement in such a program.

Each candidate completes an application form found on the ASEE/AAC website. The application form documents the applicant's professional qualifications and experience, specifically, education, employment, membership and activities in professional societies including, but not limited to ASEE, and professional licensure. Applicants are also asked to state how their background and experience can contribute to the engineering accreditation process, and to describe their contributions to improving gender and cultural diversity. During fall 2005, more than 40 applications were received. The candidates are highly qualified, and most are from the programs affected, so that peer evaluation will be a reality. The first training session will occur at the 2006 ASEE Conference and Exposition in Chicago.

#### Training Materials for PEVs

Training sessions for PEVs will follow the standard ABET procedure, consisting primarily of materials prepared for this purpose by ABET<sup>2</sup>. In most of the other professional societies (ASME, ASCE, IEEE, etc.), these materials are supplemented with discipline specific information pertinent to ABET Program Criteria (Criterion 8). Although there are no program criteria for the multidisciplinary programs, the AAC is devising additional resources to supplement the ABET materials. As of the writing of this paper, preparation of these materials is still in progress. A brief summary of the status of these materials is presented here, and the full documents will be complete for the 2006 ASEE Conference.

The ASEE/AAC materials begin with a survey of multidisciplinary programs, consisting of three lists: Engineering, Engineering Science and Engineering Physics, and Engineering Technology programs. A paper by Newberry and Farison<sup>3</sup> is introduced to demonstrate the variety in the content and intent of the multidisciplinary programs in different universities. This paper examines the multidisciplinary programs from the first two lists and classifies them as "primary" – the only engineering program in the institution, or "secondary" – one of several engineering programs in the institution. Programs are further classified as primary / philosophical -- a primary program that is truly general or interdisciplinary of its intrinsic merit; primary / instrumental -- a primary program used as an instrument through which one or more designated disciplinary options or concentrations are offered; secondary / instrumental -- a secondary program used as an instrument to provide designated options or concentrations, perhaps until they reach separate program maturity, or for interdisciplinary study within engineering; and, secondary / flexible -- a secondary program that facilitates interdisciplinary study in areas outside of engineering for students with unique career interests. All PEVs should understand that any of these classes, or any variation or combination of these classes, can describe a valid engineering or technology program under the set of titles represented by ASEE. Since there will be substantial diversity in the goals and objectives of the various programs, as well as diversity

in their constituencies, it may be expected that there will be substantial variation in their areas of emphases.

The rest of the ASEE/AAC materials focus on Program Educational Objectives or ABET Criterion 2. Lacking discipline specific Program Criteria (Criterion 8), multidisciplinary engineering programs may characterize themselves uniquely in terms of the Program Educational Objectives. Therefore we expect that these Objectives will be clear and well thought out. The Objectives should be published on the web and in the catalog, and accessible to students and recruiters. They should be developed through interactions with the program constituencies, and reviewed by all constituencies periodically, as is required by ABET Criterion 2. There must be a logical mapping of curriculum to the Objectives, and evidence that the graduates are attaining the Objectives. Although ABET clearly mandates that all engineering programs satisfy Criterion 2, arguably multidisciplinary programs have a greater accountability to satisfy this criterion due to the lack of discipline specific program criteria.

#### Future Plans

The first training session for PEVs of the multidisciplinary programs will occur at the 2006 ASEE Conference and Exposition. The new PEVs will evaluate about 10 multidisciplinary engineering programs during the 2006-2007 ABET cycle. AAC will coordinate these evaluations, selecting the PEVs and interacting with ABET.

AAC has established a website<sup>4</sup> to inform its constituencies of its progress. The website will provide information on the accreditation process for multidisciplinary programs. The AAC plans to collaborate with the Multidisciplinary Engineering Division in setting up a list-serve for department heads and coordinators of the multidisciplinary programs for information exchange.

#### Conclusions

Initiated in June 2005, the newly charged AAC has taken significant steps toward the establishment of fair and responsive accreditation procedures for multidisciplinary engineering programs. A process for nominating and vetting PEV candidates is now in place. Training materials are under preparation and will be available during the 2006 ASEE Conference and Exposition. A website has been established, and a process for information exchange among the multidisciplinary programs is envisioned. We believe that these actions represent significant progress toward the goal of providing a voice for multidisciplinary programs in ABET decisions.

#### References

1. <http://www.abet.org/history.shtml>, accessed 2/17/2006
2. <http://www.abet.org/pev.shtml>, accessed 2/17/2006
3. Newberry, and Farison, James, "A Look at the Past and Present of General Engineering and Engineering Science Programs", *Journal of Engineering Education*, July 2003, pp. 217-224.
4. <http://www.asee.org/member/organizations/AccreditationCommittee.cfm>, accessed 2/17/2006

Appendix 1: Membership of the AAC 2005-2006  
**Accreditation Activities Committee**  
**2005-2006**

*This listing uses the charge approved by the ASEE Board of Directors in June 2004, and the committee list uses the formula proposed to the ASEE Board of Directors in April 2005.*

***Membership***

ASEE President

Ronald Barr  
rbarr@mail.utexas.edu

ASEE Past-President

Sherra Kerns  
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1. Edwin C. Jones, Jr., Chair (Member-at-Large)  
Iowa State University  
n2ecj@iastate.edu
2. John Weese, (ASEE Representative to the ABET Board of Directors)  
Texas A&M University  
[jweese@tamu.edu](mailto:jweese@tamu.edu)
3. Sarah Rajala (ASEE Rep to ABET-EAC)  
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4. Timothy W. Zeigler, (ASEE Rep to ABET-TAC)  
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5. Joan Gosink, Member-at-Large, Multidisciplinary Engineering Constituent Committee  
Colorado School of Mines  
[jgosink@mines.edu](mailto:jgosink@mines.edu)
6. Steve Cobb, Member-at-Large, Engineering Physics Division  
Murray State University  
steve.cobb@murraystate.edu
7. Walter Buchanan, Member at Large, Engineering Technology Division  
Texas A&M University, TAMU 3367  
buchanan@entc.tamu.edu

8. EAC Visit Assignment Coordinator—James Farison  
Baylor University  
[jim\\_farison@baylor.edu](mailto:jim_farison@baylor.edu)
9. TAC Visit Assignment Coordinator—David Baker  
Rochester Institute of Technology  
[davebaker@ieee.org](mailto:davebaker@ieee.org)
10. Cooperating Society Representative (to be determined when there is a formal cooperative society associated with ASEE)

## Appendix 2: Charge of the AAC

### **ASEE ACCREDITATION ACTIVITIES COMMITTEE CHARGE APPROVED BY ASEE BOARD OF DIRECTORS 06/20/2004**

1. To provide a forum for discussion of accreditation issues that are relevant to ASEE;
2. To recommend to the ASEE President one or more candidates to serve as ASEE representatives to the ABET Board of Directors.
3. To recommend to the ASEE President one or more candidates for service on the Engineering Technology Accreditation Commission (TAC) and on the Engineering Accreditation (EAC) Commission.
4. To establish processes and procedures for undertaking its responsibilities, including qualifications for Program Evaluators (PEVs), with the approval of the ASEE Board of Directors or designee.
5. To select program evaluators (PEVs) for TAC and EAC engineering / engineering science and similarly named programs in accordance with ABET rules of procedures, to train and monitor ASEE PEVs, and to recommend to team chairs PEVs for multidisciplinary programs.
6. To advise ASEE representatives to ABET concerning positions to be taken in ABET affairs;
7. To propose initiatives to the ABET Board of Directors or Commissions to enhance their operation;
8. To prepare a brief report for each meeting of the Board of Directors on the activities of ABET;
9. To undertake additional tasks as requested by the ASEE Board of Directors.