

**Background Information for Panel Discussion on
ABET/EAC Surveying Engineering Program Criteria
at the
XXI North American Surveying & Mapping Educators Conference
to be held July 11 – 13, 2007 at
Ferris State University – Big Rapids, Michigan**

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Introduction:

Organizers of the 21st Surveying & Mapping Educators Conference to be held in Big Rapids, Michigan, July 11 – 13, 2007, have agreed to include a panel discussion of “Criteria for ABET/EAC Surveying Engineering Programs.” See copy of accepted proposal at www.globalcogo.com/tc-proposal.pdf.

The goal for this document is to provide background information to be considered by the panelists in preparing for the discussion. This summary was written by Earl F. Burkholder and reviewed/revised/improved by the ASCE Geomatics Division (GMD) Executive Committee before being sent to the invited panelists. Corrections, additional material, or improvements are welcome. Send to Professor Burkholder at eburk@globalcogo.com.

Hopefully, each panelist will prepare a written paper and submit it to conference organizers for review and publication along with other Conference Papers. The Editor of the ASCE Journal of Surveying Engineering is willing to collaborate and assist with review of presented papers if the decision to publish them as a special of the JSE is made.

Ideally, the Conference will discuss the issues and end up with one or more resolutions representing the consensus of the assembled group of Surveying & Mapping Educators.

The broad question for the panel is:

“What is the role of Surveying & Mapping Educators in preparing students for a productive career in surveying, geomatics, or related spatial data profession?”

The specific question for the panel is:

“What are the appropriate EAC criteria for Surveying Engineering programs?”

Background:

Over the past 30 years, surveying has emerged and grown as a distinct profession, separate from civil engineering. ASCE GMD applauds and supports same. That being said, there are still areas of overlap between civil engineering and surveying. Civil engineering still needs surveyors and surveying stands to benefit from a continuing relationship with civil engineering. Ideally, each profession will be judged on its own merit and practitioners in each will recognize and respect the talent and contribution of the other – at all levels.

Prior to 1984, the options for ABET surveying accreditation were either the Technology Accreditation Commission (TAC) or the Engineering Accreditation Commission (EAC). But, boards of licensure in many states would not recognize a TAC degree at par value for licensure and EAC program criteria did not accommodate desired surveying content (e.g., legal aspects etc). A comprehensive surveying program was not a good fit for either TAC or EAC. After much discussion, ABET established the Related Accreditation Commission (RAC) and the adopted surveying program criteria were intended to be equal in rigor with engineering program criteria. The first RAC surveying programs were visited in 1984. RAC is now the Applied Science Accreditation Commission (ASAC).

Surveying program criteria for each ABET commission are submitted by ACSM, Lead Society, in cooperation with the ASCE. ACSM also has responsibility for recruiting, training, and maintaining a pool of surveying program evaluators. In the early 1980's, ACSM had a full-time Education Director on staff to handle those issues/details. Among others, the Education Director relied upon advice and assistance of volunteers who served on the ACSM Curriculum, Accreditation, and Registration (CAR) Committee.

Many changes have taken place since then. ACSM no longer has an Education Director, the CAR Committee is now the CARE Committee (Education has been added), ABET has evolved to the "outcomes assessment" mode of evaluation, the digital revolution has fostered many changes in the way spatial data are handled/used by society, and the ASCE Geomatics Division is experiencing a resurgence of interest among its members.

Given that spatial data are now characterized as digital and 3-dimensional, that surveying and mapping have a long proud history in generating and using spatial data, that evaluation of evidence is as critical as ever (for both boundary & non-boundary issues/measurements), that there is an ever-increasing number of spatial data users, that efficient use of spatial data is essential to national and global economic development, that surveying & mapping educators are a diverse - but very talented - group, that much more can be achieved by cooperative collaboration than by divisive exclusions, and that the decisions made by surveying & mapping educators have a huge impact on our profession, we need to develop a bold vision for our future.

Observations:

Others may offer additional insight on the issues, but these are offered as a place to start.

1. The civil engineering profession (ASCE) still supports development of surveying professionals within the Geomatics Division. The Journal of Surveying Engineering remains a very successful high-quality scientific peer-reviewed journal.
2. Dual licensure (professional engineer and professional surveyor) is very popular. Career and professional opportunities abound for dual registrants.
3. The surveying profession includes much more than just engineering surveying, but engineering surveying is a vital part of the civil engineering profession. As such,

surveying engineering deserves and receives the attention and support of the larger ASCE organization.

4. Surveying and civil engineering can and should enjoy mutual respect and beneficial relationships. Historically, there are many examples of collaborative efforts. However, there is much room for growth here as evidenced by persons in each discipline attempting to enhance personal, professional, or even institutional reputations on the foibles of those in another discipline.
5. ABET accredits surveying programs in the:
 - Technology Accreditation Commission (TAC)
 - Applied Science Accreditation Commission (ASAC)
 - Engineering Accreditation Commission (EAC)and the surveying program criteria for each of the three commissions are the responsibility of ACSM. Currently, there is very little difference between the surveying program criteria for the EAC and the ASAC. The General Criteria between those two commissions are quite similar and the pool of Surveying Program Evaluators is the same for all commissions.
6. Many in both professions have recognized the benefits of collaborative efforts with regard to the overlap between the practice engineering and surveying. Society is well-served by such cooperation. However, some have argued that the public is not adequately protected unless a better, exclusive, distinction is drawn between surveying and engineering. Such efforts are less than satisfactory because competency decisions need to be based upon the capability and actions of the person instead of automatically disqualifying one based upon the fact that they are only a “surveyor” or only an “engineer.” In either case, education (or maybe more education) is an essential part of the solution.
7. The ABET Accreditation Policy and Procedure Manual, Section II.B.4.a states, “Programs accredited by the EAC are those leading to the professional practice of engineering.” Taken at face value, that implies:
 - a. Students graduating from an EAC surveying engineering program are reasonably expected to be prepared for a career in the practice of engineering.
 - b. Students graduating from an EAC surveying engineering program are reasonably expected to be eligible to take and prepared to pass the Fundamentals of Engineering (FE) exam.
8. The NCEES model law recommends that normal entry to the FE exam is graduation from an ABET/EAC program. Many state boards also use that criterion. A legitimate argument can be made for the converse. If a student graduates from an ABET/EAC accredited program, he/she should be prepared for and permitted to take the FE exam.
9. Consistent with professional engineering requirements, it is proposed that EAC surveying engineering program criteria be revised to include the expectation that graduates are prepared for and eligible to take the FE exam.