An Overview of Some Issues Relating to the Accreditation Process

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ABSTRACT

This paper provides an overview of some issues relating to the accreditation process, in particular, as the process relates to the sciences and engineering. After providing an introduction to the accreditation process, the paper looks more closely at topics such as constituents, roles of the administration and faculty in the accreditation process, sample criteria, continuous quality improvement, an accreditation time-line, and the benefits and the cost of accreditation.

1. INTRODUCTION

This paper provides an overview of some issues relating to the accreditation process, in particular, as the process relates to the sciences and engineering. Although the author has been involved with two University-wide re-accreditation efforts (once in the role of Dean and once in the role of faculty member) with the Southern Association of Colleges and Schools, this paper will focus on individual programs. Specifically, the paper approaches accreditation from an Accreditation Board for Engineering and Technology (ABET) perspective. ABET is the premier accrediting agency for applied science, computing, engineering, and technology programs in the United States, and a recognized world leader in accreditation. Some institutions that have ABET-accredited programs are Armstrong Atlantic State University, Harvey Mudd College, Harvard University, the Massachusetts Institute of Technology, the National University of Singapore, and the University of Rhode Island. The number of institutions seeking and achieving accreditation status with ABET is steadily increasing each year.

ABET was founded in 1932 and has a rich history (see [1]). As of 2007, ABET began to accredit programs on an international level. Prior to that time, ABET had numerous agreements in place, called Mutual Recognition Agreements (MRAs), that deemed certain programs around the world to be substantially equivalent. The best known of these agreements is the Washington Accord (see [2]) involving the following countries as signatories: Australia, Canada, Chinese Taipei (Taiwan), Hong Kong, Ireland, Japan, Korea, New Zealand, Singapore, South Africa, United Kingdom,
and United States. Germany, India, Malaysia, Russia, and Sri Lanka hold provisional status. Many Memoranda of Understanding (MOUs) have been established between ABET and peer accrediting agencies throughout the world, as ABET assists countries who are developing accreditation policies. New agreements are being established now; for example, as of this writing, the Seoul Accord is under development and will be an agreement for relating the quality of computing programs to one another at the international level.

Before we get too far ahead of ourselves, let us ask the question: What is accreditation? Accreditation is one means of performing quality assurance. If a program achieves an accreditation from a rigorous accrediting agency, one can be assured that that program meets a certain standard of excellence, namely, the standard that would be required to pass the test of the accrediting agency’s criteria. In §4 we provide examples of what such a criteria looks like. The criteria become a sort of handbook for departments—greatly influencing curriculum, assessment practices, student issues, and the support structure for a program. In the United States accreditation is non-governmental. However, in some countries the government is involved with accreditation. In the United States accreditation is a peer-review process carried out by volunteers, whereas the process can differ in other countries. In Thailand the National Accreditation Council (NAC) is chaired by the Ministry of Industry. The NAC is a signatory on numerous MRAs with various accrediting agencies throughout the world.

Accreditation criteria are set by experts in the field and usually reflect best practices. Such criteria are open to public comment, and the criteria are revised periodically. Programs interested in becoming accredited must undergo a comprehensive Self-Study [3-5] and then a thorough on-site review process. The timeline for such a process is covered in §6 and the benefits and costs of this process are covered in §7. Given the time and financial commitments involved in accreditation efforts, there must be buy-in from administrators and faculty to support such a major effort. Issues relating to the administration and faculty are covered in §3. The constituents of a program must have input into the program educational objectives and program outcomes. We cover these issues in detail in §2. The initial accreditation effort is usually significant, as curriculum may need to be brought in line with the criteria, continuous quality improvement processes may need to be developed, student advising policies may need to be formalized, and so on. However, the efforts usually greatly strengthen and improve the quality of a program, and furthermore, once faculty have come up to speed about accreditation, re-accreditation and maintaining a quality program becomes an easier task. The accreditation process is a worthwhile process for any program striving to achieve excellence.

2. Constituents

Programs that have achieved accreditation publish this fact on their websites, in their brochures, and in their catalogs. Such information is helpful to perspective students, their parents, graduate schools where students may seek to advance their studies, and potential employers of graduates of the program. Knowing that a program is accreditation under a given criteria informs people that the program meets that standard of excellence. Of course, there are quality programs that are not accredited, but such programs often do not have the same processes in place for continuous quality improvement (see §5) that accredited programs have, and as such, probably will not be improving at the same rate of speed as an accredited program. Eventually such programs will lag behind, and
perhaps at that time will seek accreditation. Obviously, such programs are not on the cutting edge of science and technology.

Many accrediting agencies’ criteria are outcomes based. Two key concepts are program educational objectives (PEOs) and program outcomes. ABET’s Accreditation Policy and Procedure Manual [6] defines program education objectives as follows: “Broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve,” and program outcomes as “Narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to skills, knowledge, and behaviors that students acquire in the matriculation through the program.” The constituents of a program must have input into helping a program defines its PEOs and program outcomes.

Who are the constituents of a program? Typically, the constituents are employers of the graduates of a program, members of industry, alumni of a program, and faculty teaching at institutions where the students may seek to attend graduate school, among others. When the faculty of a given program develop their PEOs and program outcomes, they should solicit input from their constituents. This input should be carefully considered in formulating the PEOs and program outcomes. After soliciting input from constituents in a computing program, for example, the following two PEOs might be formulated:

1. Graduates shall work in the computing industry in managerial roles.

2. Graduates shall receive advanced degrees and teach computing at the high-school level.

These examples illustrate two objectives that a program might be trying to achieve and that its constituents desire. It is customary for a program to have about four to six PEOs, and then a somewhat larger number of program outcomes that support the PEOs. Input from constituents is usually solicited during a face-to-face meetings, such as an industrial advisory board meetings (see [7-11]) or through surveys.

3. ROLES OF ADMINISTRATORS AND FACULTY

Because of the cost of the accreditation process (see §7), without the support of the administration, it would be unlikely that a program would seek accreditation. Financial support needs to be provided not only for the accreditation fees themselves, but also ongoing support of the department offering the program. The administration not only needs to provide financial support, but also encouragement to the faculty to strive for excellence in their programs. Programs accredited by ABET, for example, bring great visibility to a University, and let the public know that the University offers high-quality programs. Employers will also immediately recognize that the University graduates top-notch students.

Of course, faculty will be on the front line. Financial support and encouragement from the administration is not enough. Faculty will be the personnel completing the comprehensive Self-Study and carrying out the day-to-day assessment activities. Faculty will be the ones tweaking the curriculum on a regular basis and documenting their activities. Therefore, it is critically important to have faculty who are willing and able to carry out the accreditation efforts.

Some faculty members should receive training about the accreditation process. They may not have to become experts, but they should be knowledgeable. ABET, for example, offers workshops on accreditation. It is a good idea for at least one member of a department having a program seeking accreditation to experience the program evaluator training. A department will need someone to lead the
accreditation efforts. This person could be the Department Chair or perhaps a more senior faculty member. Although seniority is not necessary, it would be beneficial to have someone who has been around the program for a significant amount of time.

Once faculty are convinced of the benefits of the accreditation process, and they see the value to the students and the program, they will usually become active participants. The leader of the accreditation efforts should parcel out work to individual faculty members in small chunks. The process needs to be ongoing and documented. A good leader will be able to streamline the process, so that faculty do not feel burdened by the amount of work that they have to put into the accreditation efforts. Usually, re-accreditation efforts require less time than initial efforts, but due to changing criteria, faculty must remain current and be willing to update activities to address the changing criteria. Faculty must keep in mind the goal of accreditation which is to develop and maintain an outstanding program for all constituents involved.

4. EXAMPLE CRITERIA

We have been talking about accreditation in the abstract. In this section we will take a brief look at the specific ABET criteria for computing programs. The purpose here is to make the discussion more concrete, and to give the reader, who is unfamiliar with accreditation criteria, a basic sense of what a representative criteria looks like.

A criteria is usually broken down into General Criteria and Program (Specific) Criteria. These in turn are organized by Category. In the case of the Computing Criteria for ABET, the General Criteria is subdivided as follows:

- **Students**—Issues relating to program completion, interaction with instructors, advising, and graduation requirements check.
- **Program Educational Objectives**—As discussed in §2 and must be thoroughly documented.
- **Program Outcomes**—As discussed in §2 and must be thoroughly documented.
- **Continuous Improvement**—See §5.
- **Curriculum**—Must be up-to-date, align with PEOs and program outcomes, and cover fundamentals.
- **Faculty**—Items relating to qualifications, faculty size, and faculty workload.
- **Facilities**—Library, information retrieval systems, classrooms, offices, and networks must be sufficient for students and faculty to carry out their work, and so that the program can meet its PEOs and program outcomes.
- **Support**—Financial resources must be available to program to attract and retain high quality faculty, maintain labs, and administer the program.
- **Program Criteria**—Deals more specially with individual programs.

Note this Criteria applies to Computer Science, Information Systems, and Information Technology. Each of these disciplines in turn then has Program Criteria, the last Category just noted. The Program Criteria deals specifically with a given discipline. For more on ABET’s Program Criteria visit see [3].

The list of items covered in the General Criteria is comprehensive and each of these points must be addressed in detail by the program’s Self-Study. During the site visit, various factions on campus will be interviewed where more information will be solicited to determine whether or not the program and institution are able to meet the criteria.

5. CONTINUOUS QUALITY IMPROVEMENT

Faculty often fear the word assessment. According to ABET, “Assessment is one or more processes that identify, collect, and
prepare data to evaluate the achievement of program outcomes and program educational objectives,” and “Evaluation is one or more processes for interpreting data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes and program educational objectives are being achieved, and results in decisions and actions to improve the program.” As one can see from these definitions, at the heart of the assessment and evaluation process are the PEOs and program outcomes. If a department does a good job defining these items with sufficient input from constituents, the entire assessment and evaluation process is simplified.

Continuous quality improvement involves assessment and evaluation. Information is identified, collected, and prepared by faculty perhaps through surveys, exit interviews, rubrics, capstone courses, industrial advisory board meetings, standard tests, and so on. This information is documented, as is the overall process. That information is then evaluated by faculty. This evaluation is documented. Changes to the program for improvement are made based on what faculty learned through the assessment and evaluation, not just based on hallway discussions. Once those changes have been implemented, those items should be re-assessed to determine whether or not the modifications had the desired impact. This process is often known as closing the (assessment) loop; this entire process should be systematic.

The key to assessment and evaluation is to educate faculty about the process and have them buy into it by seeing the benefits of the process. People unfamiliar with assessment often go overboard. They collect too much information; usually spending too little time on evaluation and actually making improvements. The idea is collect information on a periodic basis, evaluate, make improvements, and document the process. Faculty do not need to become true experts in assessment and evaluation, but at least one member of the department should have a good handle on these topics, ABET, for example, offers workshops on continuous quality improvement.

6. TIME-LINE FOR ACCREDITING A PROGRAM

We use ABET as an example for providing a time-line for a program that is interested in considering becoming accredited. The process may seem daunting, but if handled systematically is not too difficult. The first step is to make the decision to come up for accreditation. Once that decision has been made, a year or two of preparation may be needed. When the program is ready, a request for evaluation is made from the institution to ABET for accreditation. Such requests are usually received in December. A comprehensive Self-Study is then prepared and submitted to ABET headquarters by July 1 of that year. In the fall a site visit will take place, say in October, for example. At that visit there is an Exit Interview where the team reports its preliminary findings to the institution. Then around February the institution will receive a Draft Statement formalizing the visiting team’s findings.

The institution has thirty days in which to respond to the Draft Statement. If problems were found with the program, the institution has a chance to correct those. The institution’s Due Process Response is then evaluated, and a Final Statement is prepared around May. In July (one year after the Self-Study was due) at the ABET Annual Meeting, a final action is decided on and notification is sent to the institution early in the fall. Thus, from the time of the initial request for evaluation, a period of about 20 months goes by before the final action is known.

There are several different possible accreditation actions that could result from
an initial visit. In order of most-to-least desirable, they are as follows:

- **Next General Review (NGR)**—meaning the program was successful and obtained a six-year accreditation.
- **Interim Report (IR)**—meaning the program had at least one weakness and it could be addressed by a report. Such a report is usually due in two years and then the program will be reconsidered. If a successful, the program’s accreditation will be extended for another four years. If unsuccessful, there are a number of other possible outcomes.
- **Interim Visit (IV)**—meaning the program had at least one weakness that could not be addressed by a report. A team will conduct another focused site visit usually within two years. The possible outcomes are similar to the IR scenario.
- **Not to Accredit (NA)**—meaning the program had at least one deficiency and cannot be accredited at this time. Such a program must wait at least another year before seeking accreditation again.

The typical duration of an accreditation period is six years, and the program must maintain the criteria throughout the period of accreditation, reporting any substantial changes to the accrediting agency in the interim.

### 7. Benefits and Cost

Students, parents, and potential employers immediately recognize the quality of an accredited program and thus the quality of the average graduate of the program. The accreditation process ensures a state-of-the-art curriculum, good facilities, and proper support for the program. Additionally, one can be sure that the program will continue to improve due to the assessment and evaluation processes that are required to be in place. In general, programs that are accredited seem to take a great deal of pride in their program and want to make it the best possible. Accredited programs appear on well-publicized lists, and so turn up frequently in searches by those seeking high-quality programs.

The cost can be measured in terms of dollars and personnel hours. Agencies usually charge a modest annual maintenance fee. As of this writing, in the case of ABET, roughly $1,000 per year per program (see [3]). The cost in the year when a site visit must take places is higher due to the travel costs of the visiting team. These costs are rising due to increased travel, accommodations, and food costs. As of this writing, for an ABET visit in the United States, the cost includes a base fee of $3,000 and a cost of $3,000 per program evaluator. For an international visit, the base fee is $8,500 and a cost of $8,500 per program evaluator. A full cost schedule can be found on the ABET website (www.abet.org). Some programs that are coming up for an initial visit may also want to hire a consultant for guidance.

Faculty devote the most amount of time to the accreditation process. Their work must be ongoing, but much of this work should be ongoing whether it is accreditation-related or not simply to, for example, maintain the program’s curriculum to international standards. The real extra time commitment comes during the preparation of the Self-Study and also during the site visit. It is hard to measure the number of hours required by individual faculty members, however, it is customary to give the person preparing a Self-Study a course release or two to focus on the Self-Study document. Self-Studies can be several hundred pages long and include a comprehensive set of material about the program.
8. CONCLUDING REMARKS

We have provided an overview of some topics relating to accreditation. Although accreditation requires significant financial and time commitments on the parts of both the administration and faculty, the rewards of the process are great: among others, a program that

▷ is well-known both nationally and internationally for its excellence
▷ serves the students well both during their studies and when they seek employment
▷ is continually improving
▷ meets a best practices curriculum model
▷ is advertised on lists of accredited programs
▷ provides parents and employers with a barometer of the quality of the program.

The key to a successful accreditation seems to be a leader among those involved with the program who can help others see the value of accreditation and who can coordinate the efforts of the faculty. This person must be very knowledgeable about the accreditation process.

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REFERENCES


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