Accreditation of Health Physics Academic Programs in the U.S.

Jason T. Harris, Ph.D. (Idaho State University)
Mark Rudin, Ph.D. (Boise State University)
Richard R. Brey, Ph.D., C.H.P. (Idaho State University)

Voluntary Accreditation of Health Physics Program

- Needed to institutionalize Health Physics Programs
- Need to establish larger university level profile
- Establish a common foundation among existing programs without changing diversity
- Establish independent third party review system to enhance *strength* of existing programs
- Help stream line transfers among HP programs particularly BS to MS
- The other problem no one wants to really talk about…..

Consensus Accreditation Criteria Were First Established

- Kick off meeting in Las Vegas attend by representatives of most programs
  - Clearly no one wanted a prescriptive set of criteria establishing which courses had to be offered and how many faculty etc needed to be involved
  - Established an ad hoc accreditation sub-committee
    - John Poston Sr.
    - Mark Rudin
    - Wes Bolch
    - Tom Borak
    - Jack Couch
    - Robert Fjeld
    - Rich Brey
- What happened next?
  - A consensus program criteria was developed
  - By consensus it was established that the accreditation approach should be one of Out–Comes-Assessment
  - By consensus it was decided that we probably should work with ABET-RAC which became ABET-ASAC
  - Evaluators were selected by the Accreditation sub-committee (half-industry/half academia)
  - Faculty and evaluator training was conducted
  - The act of accreditation of Health Physics programs was undertaken under the auspicious of ABET

ABET General Education Criteria

Criterion 1. Students

The quality and performance of the students and graduates are important considerations in the evaluation of an applied science program. The institution must evaluate, advise, and monitor students to determine its success in meeting program objectives. The institution must have and enforce policies for the acceptance of transfer students and for the validation of courses taken for credit elsewhere. The institution must also have and enforce procedures to assure that all students meet all program requirements.

Criterion 2. Program Educational Objectives

The applied science program for which an institution seeks accreditation or reaccreditation must have in place:

(a) detailed published educational objectives that are consistent with the mission of the institution and these criteria

(b) a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated

(c) a curriculum and processes that ensure the achievement of these objectives

(d) a system of ongoing evaluation that demonstrates achievement of these objectives and uses the results to improve the effectiveness of the program.

Criterion 3. Program Outcomes and Assessment

Applied science programs must demonstrate that graduates have:

(a) an ability to apply knowledge of mathematics, science, and applied sciences

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to formulate or design a system, process or program to meet desired needs

(d) an ability to function on multi-disciplinary teams

(e) an ability to identify and solve applied science problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of solutions in a global and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

(k) an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice.

Each program must have an assessment process with documented results. Evidence must be given

1 2007-2008 Criteria for Accrediting Applied Science Programs

that the results are applied to the further development and improvement of the program. The assessment process must demonstrate that the outcomes important to the mission of the institution and the objectives of the program, including those listed above, are being measured. Evidence that may be used includes, but is not limited to, the following: student portfolios, including graded assignments and/or projects; nationally-normed subject content examinations; alumni surveys that document professional accomplishments and career development activities; placement data of graduates; and employer surveys.

ABET General Education Criteria

Criterion 4. Professional Component

The professional component requirements specify subject areas appropriate to applied science programs, but do not prescribe specific courses. The program's faculty must assure that the applied science curriculum devotes adequate attention and time to each component, consistent with the objectives of the program and institution. Students must be prepared for applied science practice through the curriculum culminating in comprehensive projects or experiences based on the cumulative knowledge and skills acquired in earlier course work. The professional component must include:

(a) a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline

(b) applied science topics appropriate to the program

(c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

Criterion 5. Faculty

The faculty is the heart of any educational program. The faculty must be of sufficient number as determined by student enrollment and the expected outcome competencies of the program. There must be sufficient faculty to accommodate adequate levels of student-faculty interaction, including classroom teaching, laboratory and field supervision, student advising and counseling, and research, as well as, non-student interactions in university service activities, professional development, and interactions with industrial and professional practitioners, as well as employers of students.

The faculty must have sufficient qualifications and must ensure the proper guidance of the program and its evaluation and development. The overall competence of the faculty may be judged by such factors as education, diversity of backgrounds, applicable experience, teaching performance, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and applicable certifications, registrations, or licensures.

Criterion 6. Facilities

Classrooms, laboratories, and associated equipment must be adequate to accomplish the program objectives and provide an atmosphere conducive to learning. Appropriate facilities must be available to foster faculty-student interaction and to create a climate that encourages professional development and professional activities. Programs must provide opportunities for students to learn the use of modern applicable instruments and equipment. Computing and information infrastructures must be in place to support the scholarly activities of the students and faculty and the educational objectives of the institution.

ABET General Education Criteria

Criterion 7. Institutional Support and Financial Resources

Institutional support, financial resources, and constructive leadership must be adequate to assure the quality and continuity of the applied science program. Resources must be sufficient to attract, retain, and provide for the continued professional development of a well-qualified faculty. Resources also must be sufficient to acquire, maintain, and operate facilities and equipment appropriate for the applied science program. In addition, support personnel and institutional services must be adequate to meet program needs.

Criterion 8. Program Criteria

Each program must satisfy applicable Program Criteria. Program Criteria provide the specificity needed for interpretation of the basic level criteria as applicable to a given discipline. If a program, by virtue of its title, becomes subject to two or more sets of Program Criteria, then that program must satisfy each set of Program Criteria; however, overlapping requirements need to be satisfied only once.

- See: http://www.abet.org/

ABET General Education Criteria

PROGRAM CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

Curriculum:

The program must demonstrate that graduates possess the necessary knowledge, skills, and attitudes to competently and ethically implement and practice applicable scientific, technical, and regulatory aspects of Health Physics. More specifically, graduates must produce a culminating senior project and demonstrate competency in the following curricular areas:

a. radiation physics

b. radiation biology

c. radiation detection and measurements with laboratory experience

d. internal and external radiation dosimetry

e. principles of radiation safety and health physics

f. contemporary issues in health physics

Faculty:

The faculty must have sufficient qualifications and must ensure proper guidance of the program and its evaluation and development. The faculty primarily committed to the program must demonstrate current knowledge of health physics through education and experience. The overall competence of the faculty may be judged by such factors as education, teaching experience, diversity of backgrounds, professional experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and certification by the American Board of Health Physics.

ABET General Education Criteria

Master's-Level Admission Requirements

Admitted students must hold an earned baccalaureate that prepares them to apply the basic principles of college-level mathematics, physics and biology. Exceptions may be admitted with an individually documented plan of study to compensate for any deficiencies.

Master's-Level Curriculum

Criteria for master's-level programs require the following additions beyond the baccalaureate level:

a. A minimum of one year of study beyond the basic-level, consisting of courses with increased depth and rigor

b. An applied science project or research activity resulting in a report that demonstrates both mastery of the subject matter and a high level of professional and public communication skills;

c. An adequate foundation in statistics, applied sciences, and/or related professional practice; and,

d. Advanced qualitative and quantitative problem-solving skills.

e. Other academic areas or specialties considered important to the program.

Master's-Level Faculty

In addition to the general qualifications specified above for baccalaureate-level faculty, master's-level faculty are expected to have demonstrated research activity appropriate to their institution's mission.

A full-time faculty member must be identified as administratively in charge of the program.

Current Status

- We have 8 accredited programs under ASAC and EAC
  - UNLV (BS)
  - Clemson (MS)
  - Bloomsburg (BS)
  - Oregon State (BS)
  - Texas A&M
  - Mystery University to be announced before the end of July
  - ISU (BS)
  - ISU (MS)
  - Uniform Services University (MS)

Feedback

- It is a great deal of effort especially the first time through
  - Provides a great deal of useful feedback to improve the programs and better organize the didactic presentation among courses
  - Once program is established it is not a great deal of extra effort
- This has given several programs substantial university profile which has helped with the institutional commitment to the programs
  - Has helped secure faculty
  - Has helped obtain resources
- Has served as a useful aspect of recruiting students
- Helps with Health Physics "Brand" among academic circles

Feedback

- ABET Society dues are high (Explanation?)
- Cost of the accreditation visit is high but…..
- Those who engage with ABET line staff sometimes find it frustrating but the ABET volunteer staff represents some of the best and most professional individuals in the country

Future and parting thoughts

- Necessary part of title protection
- Needs to be more closely tied to professional certification
- It is envisioned that three to five more programs will eventually seek accreditation
- Society costs may be spread out among major benefactors of the profession
- Observed to be a natural part of the development of the profession

THANK YOU!

QUESTIONS?