PROPOSED CHANGES TO THE CRITERIA

The following section presents two sets of proposed changes to these criteria. These proposals were approved by the Engineering Accreditation Commission (EAC) and were brought before the ABET Board of Directors on November 1, 2008 for preliminary approval. Before being approved for final implementation in the accreditation process, these proposals are published here for circulation among the institutions with accredited programs and other interested parties for review and comment.

For the first set of proposed changes, approved for a one-year first reading review and comment period, comments will be considered until June 15, 2010. The ABET Board of Directors will determine, based on the comments received and on the advice of the EAC, the content of the adopted criteria. The adopted criteria will then become effective following the ABET Board of Directors Meeting in the fall of 2010 and will first be applied by the EAC for accreditation actions during the 2011-12 academic year.

For the second set of proposed changes the ABET Board of Directors has approved a two-year first reading review and comment period for the EAC Harmonized Criteria. Comments will be considered until April 1, 2010. The Harmonized Criteria presented in the Proposed Changes Section reflect changes, based on comments received to-date during the two-year first reading period, as presented to the ABET Board for information at the October 31, 2009 meeting. The ABET Board of Directors will determine, based on the comments received and on the advice of the EAC, the content of the adopted harmonized criteria in the fall of 2010 and will first be applied by the EAC for accreditation actions during the 2011-2012 academic year.

Comments relative to the proposed criteria changes should be addressed to: Accreditation Director, ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 or to accreditation@abet.org.
These program criteria apply to engineering programs including “construction” and similar modifiers in their title.

3. Curriculum
The program must demonstrate the graduates can apply knowledge of have: proficiency in mathematics through differential and integral calculus, probability and statistics, general chemistry, and calculus-based physics; can analyze and design construction processes and systems—proficiency in engineering design—in a construction engineering specialty field applying knowledge of methods, materials, equipment, planning, scheduling, safety, and cost analysis; an understanding of can explain basic legal and ethical concepts and the importance of professional engineering licensure in practice issues related to the construction industry; an understanding of construction processes, communications, methods, materials, systems, equipment, planning, scheduling, safety, cost analysis, and cost control; and can explain basic concepts—an understanding of management topics such as economics, business, accounting, communications, law, statistics, ethics, leadership, decision and optimization methods, process analysis and design, engineering economics, engineering management, safety, and cost control—engineering.

2. Faculty
The program must demonstrate that the majority of faculty teaching courses that are primarily design in content are qualified to teach the subject matter by virtue of professional licensure, or by education and design experience. The faculty must include at least one member who has had full-time experience and decision-making responsibilities in the construction industry.
PROPOSED HARMONIZED GENERAL CRITERIA
FOR ENGINEERING PROGRAMS

Recommended Additions and Deletions
Approved by EAC, July 18, 2009 and
Approved by EAC Executive Committee, September 12, 2009

Criteria for Accrediting Engineering Programs
Effective for Evaluations during the 20xx-20xx Accreditation Cycle

Introduction
These criteria are intended to assure quality and to foster the systematic pursuit of improvement in the quality of engineering education that satisfies the needs of constituencies in a dynamic and competitive environment. It is the responsibility of the institution seeking accreditation of an engineering program to demonstrate clearly that the program meets the following criteria.

This document contains three sections. The first section includes important definitions used by all ABET commissions. These definitions, taken from the ABET Accreditation Policy and Procedure Manual, are included here so that this document is self-contained.

The second section contains the General Criteria for Baccalaureate Level Programs that must be satisfied by all programs accredited by the Engineering Accreditation Commission of ABET and the General Criteria for Masters Level Programs that must be satisfied by those programs seeking advanced level accreditation.

The third section contains the Program Criteria that must be satisfied by certain programs. The applicable Program Criteria are determined by the technical specialties indicated by the title of the program. Overlapping requirements need to be satisfied only once.

DEFINITIONS
(From Section II.D.1. of the ABET Accreditation Policy and Procedure Manual)
While ABET recognizes and supports the prerogative of institutions to adopt and use the terminology of their choice, it is necessary for ABET volunteers and staff to have a consistent understanding of terminology. With that purpose in mind, the Commissions will use the following basic definitions:

Program Educational Objectives – Program educational objectives are broad statements that describe what graduates are expected to attain within a few years of graduation. Program educational objectives are based on the needs of the program’s constituencies.

Student Outcomes – Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the objective or outcome being measured. Appropriate sampling methods may be used as part of an assessment process.
**Evaluation** – Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes and program educational objectives are being attained. Evaluation results in decisions and actions regarding program improvement.

I. GENERAL CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

All programs seeking accreditation from the Engineering Accreditation Commission of ABET must demonstrate that they satisfy all of the following General Criteria for Baccalaureate Level Programs.

**Criterion 1. Students**

Student performance must be evaluated. Student progress must be monitored to foster success in attaining student outcomes, thereby enabling graduates to attain program educational objectives. Students must be advised regarding curriculum and career matters.

The program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution. The program must have and enforce procedures to **assure** ensure and document that students who graduate meet all graduation requirements.

**Criterion 2. Program Educational Objectives**

The program must have in place published program educational objectives that are consistent with the mission of the institution, the needs of the program’s various constituencies, and these criteria. There must be a documented and effective process, involving program constituencies, for the periodic review and revision of these program educational objectives.

**Criterion 3. Student Outcomes**

The program must have documented student outcomes that prepare graduates to attain the program educational objectives.

Student outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program.

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering 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 engineering solutions in a global, economic, environmental, 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 engineering tools necessary for engineering practice.

**Criterion 4. Continuous Improvement**

The program must regularly use appropriate, documented processes for evaluating the extent to which both the program educational objectives and the student outcomes are being attained. Assessment data is generated from two processes: self-evaluation and peer evaluation. The two processes should evaluate the extent to which both the program educational objectives and the student outcomes are being attained. The results of these evaluations must be systematically used to effect improvement of the program. Other available information may also be used to assist in effecting the continuous improvement of the program.

**Criterion 5. Curriculum**

The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The faculty must ensure that the program curriculum devotes adequate attention and time to each component, consistent with the outcomes and objectives of the program and institution. The professional component must include:

(a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline. Basic sciences are defined as biological, chemical, and physical sciences.

(b) one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.

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

Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

One year is the lesser of 32 semester hours (or equivalent) or one-fourth of the total credits required for graduation.
Criterion 6. Faculty

The faculty must be of sufficient number and must have the competencies to cover all of the curricular areas of the program. There must be sufficient faculty to accommodate adequate levels of student-faculty interaction, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners, as well as employers of students.

The program faculty must have appropriate qualifications and must have and demonstrate sufficient authority to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program, its educational objectives and outcomes. The overall competence of the faculty may be judged by such factors as education, diversity of backgrounds, engineering experience, teaching effectiveness and experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and licensure as Professional Engineers.

Criterion 7. Facilities

Classrooms, offices, laboratories, and associated equipment must be safe and adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning. Modern tools, equipment, computing resources, and laboratories appropriate to the program must be available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs. Students must be provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories available to the program.

The library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty.

Criterion 8. Institutional Support

Institutional support and leadership must be adequate to ensure the quality and continuity of the program.

Resources including institutional services, financial support, and staff (both administrative and technical) provided Resources available to the program must be adequate to meet program needs. The resources available to the program must be sufficient to attract, retain, and provide for the continued professional development of a qualified faculty. The resources available to the program must be sufficient to acquire, provide, maintain, and operate, and maintain infrastructures, facilities, and equipment appropriate for the program, and to provide an environment in which student outcomes can be attained. attainment of student outcomes.

II. GENERAL CRITERIA FOR MASTERS LEVEL PROGRAMS
Masters level programs must develop, publish, and periodically review, educational objectives and program outcomes. The criteria for masters level programs are fulfillment of the baccalaureate level general criteria, fulfillment of program criteria appropriate to the masters level specialization area, and one academic year of study beyond the baccalaureate level. The program must demonstrate that graduates have an ability to apply masters level knowledge in a specialized area of engineering related to the program area.

III. PROGRAM CRITERIA

Each program must satisfy applicable Program Criteria (if any). Program Criteria provide the specificity needed for interpretation of the baccalaureate level criteria as applicable to a given discipline. Requirements stipulated in the Program Criteria are limited to the areas of curricular topics and faculty qualifications. 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.