ENGINEERING ACCREDITATION COMMISSION

Comparison of Proposal Submitted in 2015 to Proposal Submitted in 2016

Submitted in 2015	Proposed for First Reading in 2016
INTRODUCTION	**INTRODUCTION**
These criteria are intended to provide a framework of education that prepares graduates to enter the professional practice of engineering who are (i) able to participate in diverse multicultural workplaces; (ii) knowledgeable in topics relevant to their discipline, such as usability, constructability, manufacturability and sustainability; and (iii) cognizant of the global dimensions, risks, uncertainties, and other implications of their engineering solutions. Further, these criteria are intended to assure quality 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.	These criteria apply to all accredited engineering programs. Furthermore, these criteria are intended to foster the systematic pursuit of improvement in the quality of engineering education that satisfies the needs of its 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.
The Engineering Accreditation Commission of ABET recognizes that its constituents may consider certain terms to have certain meanings; however, it is necessary for the Engineering Accreditation Commission to have consistent terminology. Thus, the Engineering Accreditation Commission will use the following definitions:	The Engineering Accreditation Commission of ABET recognizes that its constituents may consider certain terms to have certain meanings; however, it is necessary for the Engineering Accreditation Commission to have consistent terminology. Thus, the Engineering Accreditation Commission will use the following definitions in applying the criteria:

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Basic Science – Basic sciences consist of chemistry and physics, and other biological, chemical, and physical sciences, including astronomy, biology, climatology, ecology, geology, meteorology, and oceanography.	**Basic Science** – Basic sciences are disciplines focused on knowledge or understanding of the fundamental aspects of natural phenomena. Basic sciences consist of chemistry and physics and other natural sciences including life, earth, and space sciences.
College-level Mathematics – College-level mathematics consists of mathematics above pre-calculus level.	**College-Level Mathematics** – College-level mathematics consists of mathematics that requires a degree of mathematical sophistication at least equivalent to that of introductory calculus. For illustrative purposes, some examples of college-level mathematics include calculus, differential equations, probability, statistics, linear algebra, and discrete mathematics.
Engineering Science – Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems.	**Engineering Science** – Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other.
Engineering Design – Engineering design is the process of devising a system, component, or process to meet desired needs, specifications, codes, and standards within constraints such as health and safety, cost, ethics, policy, sustainability, constructability, and manufacturability. It is an iterative, creative, decision-making process in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally into solutions.	**Engineering Design** – Engineering design is the process of devising a system, component, or process to meet desired needs and specifications within constraints. It is an iterative, creative, decision-making process in which the basic sciences, mathematics, and engineering sciences are applied to convert resources into solutions. The process involves identifying opportunities, performing analysis and synthesis, generating multiple solutions, evaluating those solutions against requirements, considering risks, and making trade-offs to identify a high quality solution under the given circumstances. For illustrative purposes only, examples of possible constraints include accessibility, aesthetics, constructability, cost, ergonomics, functionality, interoperability, legal considerations, maintainability, manufacturability, policy, regulations, schedule, sustainability, or usability.
Teams – A team consists of more than one person working toward a common goal and may include individuals of diverse backgrounds, skills, and perspectives.	**Team** – A team consists of more than one person working toward a common goal and should include individuals of diverse backgrounds, skills, or perspectives consistent

	with ABET's policies and positions on diversity and inclusion.
One Academic Year – One academic year is the lesser of 32 semester credits (or equivalent) or one-fourth of the total credits required for graduation with a baccalaureate degree.	*[The definition of Academic Year was deleted]*

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CRITERION 3. STUDENT OUTCOMES	**GENERAL CRITERION 3: STUDENT OUTCOMES**
The program must have documented student outcomes. Attainment of these outcomes prepares graduates to enter the professional practice of engineering. Student outcomes are outcomes (1) through (7) plus any additional outcomes that may be articulated by the program.	The program must have documented student outcomes that support the program educational objectives. Attainment of these outcomes prepares graduates to enter the professional practice of engineering. Student outcomes are outcomes (1) through (7), plus any additional outcomes that may be articulated by the program.
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	(1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.	(2) An ability to apply the engineering design process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline.
3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	(3) An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
4. An ability to communicate effectively with a range of audiences.	(4) An ability to communicate effectively with a range of audiences.
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	(5) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.	(6) An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge.
7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.	(7) An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative and inclusive environment.

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CRITERION 5. CURRICULUM	GENERAL CRITERION 5: CURRICULUM
The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The curriculum must support attainment of the student outcomes and must include:	The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The program curriculum must provide adequate content for each area, consistent with the student outcomes and program educational objectives, to ensure that students are prepared to enter the practice of engineering. The curriculum must include:
(a) one academic year of a combination of college-level mathematics and basic sciences (some with experimental experience) appropriate to the program.	(a) a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience appropriate to the program.
(b) one and one-half academic years of engineering topics, consisting of engineering sciences and engineering design appropriate to the program and utilizing modern engineering tools.	(b) a minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering sciences and engineering design, and utilizing modern engineering tools.
(c) a broad education component that includes humanities and social sciences, complements the technical content of the curriculum, and is consistent with the program educational objectives.	(c) a broad education component that complements the technical content of the curriculum and is consistent with the program educational objectives.
Students must be prepared to enter the professional practice of engineering 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 constraints.	(d) a culminating major engineering design experience based on the knowledge and skills acquired in earlier course work that incorporates appropriate engineering standards and multiple constraints.