

Computing Accreditation Commission

Side-by-side Comparison: Current Criteria (Version 1) v. 2019-20 Criteria (Version 2)

April 18, 2018

GENERAL CRITERIA

DEFINITIONS

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
<p>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:</p> <p>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.</p> <p>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 knowledge, skills, and behaviors that students acquire as they progress through the program.</p> <p>Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.</p> <p>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 are being attained.</p>	<p>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:</p> <p>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.</p> <p>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 knowledge, skills, and behaviors that students acquire as they progress through the program.</p> <p>Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.</p> <p>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 are being attained.</p>

Evaluation results in decisions and actions regarding program improvement. <i>[No CAC-specific definitions section]</i>	Evaluation results in decisions and actions regarding program improvement. <i>[No CAC-specific definitions section]</i>
<i>[The definition of “one academic year” was previously only provided in the self-study document, and was not explicitly provided in the criteria]</i>	<i>[The definition of “one academic year” was removed in favor of 30 semester units or equivalent.]</i>
<i>[Not explicitly defined in the criteria]</i>	<i>[Not explicitly defined in the criteria, but now described in General Criteria, Criterion 5, Paragraph 1]</i>

CRITERION 3, STUDENT OUTCOMES

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
The program must have documented student outcomes that prepare graduates to attain the program educational objectives. There must be a documented and effective process for the periodic review and revision of these student outcomes.	The program must have documented and publicly stated student outcomes that include (1) through (5) below and any outcomes required by applicable Program Criteria. The program may define additional outcomes. Graduates of the program will have an ability to: ...
The program must enable students to attain, by the time of graduation.	<i>[“Must enable” language has been removed. Items below in Criterion 3 are now student outcomes that must be assessed.]</i>
(a) An ability to apply knowledge of computing and mathematics appropriate to the program’s student outcomes and to the discipline.	<i>[Now incorporated into Criterion 5, Paragraph 1]</i>
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.	2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
(d) An ability to function effectively on teams to accomplish a common goal.	5. Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities.	6. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
(f) An ability to communicate effectively with a range of audiences.	3. Communicate effectively in a variety of professional contexts.

(g) An ability to analyze the local and global impact of computing on individuals, organizations and society.	<i>[Now incorporated into Criterion 5, Paragraph 2, Item 3]</i>
(h) Recognition of the need for and an ability to engage in continuing professional development.	<i>[Now incorporated into Criterion 5, Paragraph 1]</i>
(i) An ability to use current techniques, skills, and tools necessary for computing practice.	<i>[Now incorporated into Criterion 5, Paragraph 2, Item 1]</i>

CRITERION 5, CURRICULUM

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
The program's requirements must be consistent with its program educational objectives and designed in such a way that each of the student outcomes can be attained. The curriculum must combine technical and professional requirements with general education requirements and electives to prepare students for a professional career and further study in the computing discipline associated with the program, and for functioning in modern society.	The program's requirements must be consistent with its program educational objectives and designed in such a way that each of the student outcomes can be attained. The curriculum must combine technical, professional, and general education components to prepare students for a career, further study, and lifelong professional development in the computing discipline associated with the program.
The technical and professional requirements must include at least one year of up-to-date coverage of fundamental and advanced topics in the computing discipline associated with the program. In addition, the program must include mathematics appropriate to the discipline beyond the pre-calculus level.	The curriculum requirements specify topics, but do not prescribe specific courses. The program must include mathematics appropriate to the discipline and at least 30 semester credit hours (or equivalent) of up-to-date coverage of fundamental and advanced computing topics that provide both breadth and depth. The computing topics must include:
For each course in the major required of all students, its content, expected performance criteria, and place in the overall program of study must be published.	<i>[No analog]</i>
<i>[From Criterion 3, Item (i)]</i>	1. Techniques, skills, and tools necessary for computing practice.
<i>[No analog]</i>	2. Principles and practices for secure computing.
<i>[From Criterion 3, Item (g)]</i>	3. Local and global impacts of computing solutions on individuals, organizations, and society.

Computer Science Program Criteria

CRITERION 3, STUDENT OUTCOMES

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
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The program must enable students to attain, by the time of graduation.	In addition to outcomes 1 through 5, graduates of the program will also have an ability to:
(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.	6. Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]
(k) An ability to apply design and development principles in the construction of software systems of varying complexity.	<i>[Now incorporated into CS Program Criteria, Criterion 5, Paragraph (a), Item 4]</i>

CRITERION 5, CURRICULUM

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
Students must have the following amounts of course work or equivalent educational experience:	The curriculum requirements specify topics, but do not prescribe specific courses. These requirements are:
(a) Computer science: One and one-third years that must include: (1) Coverage of the fundamentals of algorithms, data structures, software design, concepts of programming languages and computer organization and architecture.	a. Computer science: At least 40 semester credit hours (or equivalent) that must include: 1. Substantial coverage of algorithms and complexity, computer science theory, concepts of programming languages, and software development. 3. Exposure to computer architecture and organization, information management, networking and communication, operating systems, and parallel and distributed computing.
(2) An exposure to a variety of programming languages and systems	<i>[Incorporated into "concepts of programming languages" from CS Program Criteria, Criterion 5, Paragraph (a), Item 1]</i>
(3) Proficiency in at least one higher-level language.	2. Substantial coverage of at least one general-purpose programming language.
(4) Advanced course work that builds on the fundamental course work to provide depth.	<i>[Incorporated into General Program Criteria, Criterion 5, Paragraph (b)]</i>
<i>[Analog is in CS Program Criteria, Criterion 3, item (k)]</i>	4. The study of computing-based systems at varying levels of abstraction.
<i>[No analog in the criteria]</i>	5. A major project that requires integration and application of knowledge and skills acquired in earlier course work.

(b) One year of science and mathematics:	<i>[This line removed; overall science and mathematics requirement reduced to provide increased overall curricular flexibility – see (b) and (c) below. Note the explicit credits required for science.]</i>
(1) Mathematics: At least one-half year that must include discrete mathematics. The additional mathematics might consist of courses in areas such as calculus, linear algebra, numerical methods, probability, statistics, number theory, geometry, or symbolic logic.	b. Mathematics: At least 15 semester credit hours (or equivalent) that must include discrete mathematics and must have mathematical rigor at least equivalent to introductory calculus. The additional mathematics might include course work in areas such as calculus, linear algebra, numerical methods, probability, statistics, or number theory.
(2) Science: A science component that develops an understanding of the scientific method and provides students with an opportunity to experience this mode of inquiry in courses for science and engineering majors that provide some exposure to laboratory work.	c. At least six semester credit hours (or equivalent) in natural science course work intended for science and engineering majors. This course work must develop an understanding of the scientific method and must include laboratory work.

Information Systems Program Criteria

DEFINITIONS

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
<i>["Information Systems Environment" is not explicitly defined in the criteria. It was defined in a separate document.]</i>	Information Systems Environment - An information systems environment is an organized domain of activity within which information systems are used to support and enable the goals of the activity. Examples of information systems environments include (but are not limited to) business, health care, government, not-for-profit organizations, and scientific disciplines.

CRITERION 3, STUDENT OUTCOMES

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
The program must enable students to attain, by the time of graduation.	In addition to outcomes 1 through 5, graduates of the program will also have an ability to:
(j) An understanding of and an ability to support the use, delivery, and management of information systems within an Information Systems environment.	6. Support the delivery, use, and management of information systems within an information systems environment. [IS]

CRITERION 5, CURRICULUM

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
Students must have course work or an equivalent educational experience that includes:	The curriculum requirements specify topics, but do not prescribe specific courses. These requirements are:
(a) Information Systems: One year that must include: (1) Coverage of the fundamentals of application development, data management, networking and data communications, security of information systems, systems analysis and design and the role of Information Systems in organizations.	a. Information systems: At least 30 semester credit hours (or equivalent) that include coverage of fundamentals and applied practice in application development; data and information management; information technology infrastructure; systems analysis, design and acquisition; project management; and the role of information systems in organizations. <i>[Note: "Security of information systems" from the current criteria is now incorporated into General Criteria, Criterion 5]</i>

(2) Advanced course work that builds on the fundamental course work to provide depth.	<i>[Now incorporated into General Criteria, Criterion 5]</i>
(b) Information Systems Environment: One-half year of course work that must include a cohesive set of topics that provide an understanding of an environment in which the information systems will be applied professionally.	b. Information systems environment: At least 15 additional semester credit hours (or equivalent) of a cohesive set of topics that provide an understanding of an information systems environment.
(b) Quantitative analysis or methods, including statistics.	c. Quantitative analysis or methods that must include statistics.

Information Technology Program Criteria

CRITERION 3, STUDENT OUTCOMES

CAC Criteria Currently In Uses (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
The program must enable students to attain, by the time of graduation.	In addition to outcomes 1 through 5, graduates of the program will also have an ability to:
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human-computer interaction, information management, programming, networking, and web systems and technologies.	<i>[Now incorporated into IT Program Criteria, Criterion 5]</i>
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems. (l) An ability to effectively integrate IT-based solutions into the user environment.	6. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems. [IT]
(m) An understanding of best practices and standards and their application.	<i>[Now incorporated into General Criteria, Criterion 5, Item 3]</i>
(n) An ability to assist in the creation of an effective project plan.	<i>[Now incorporated into General Criteria, Criterion 3, Outcome 5]</i>

CRITERION 5, CURRICULUM

CAC Criteria Currently In Use (Version 1)	CAC Criteria for Use in 2019-20 (Version 2)
Students must have course work or an equivalent educational experience that includes: (a) Coverage of the fundamentals of:	The curriculum requirements specify topics, but do not prescribe specific courses. The curriculum must include coverage of fundamentals and applied practice in the following:
2. Information assurance and security	<i>[Now incorporated into General Criteria, Criterion 5]</i>
<i>[Previously included in IT Program Criteria, Criterion 3]</i>	a. The core information technologies of human-computer interaction, information management, programming, web systems and technologies, and networking.
3. System administration and system maintenance	b. System administration and system maintenance.
4. System integration and system architecture.	c. System integration and system architecture.
(b) Advanced course work that builds on the fundamental course work to provide depth.	<i>[Now incorporated into General Criteria, Criterion 5]</i>

