



**DATE:** October 20, 2017  
**TO:** Computing Area Delegation  
**FROM:** Donna Reese, Chair, Computing Accreditation Commission  
**SUBJECT:** Proposed Revisions to Criteria 3 and 5 – Second Reading and Implementation

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**RECOMMENDED MOTION:**

That the Computer Area Delegation approves the attached *Proposed Revisions to Criteria for Accrediting Computing Programs 3 and 5 and the Computer Science, Information Systems, and Information Technology Program Criteria for second reading and subsequent implementation.*

**BACKGROUND:**

The Computing Accreditation Commission approved the proposed revisions at the annual Commission meeting in July. As described in the attached report, the joint CAC/CSAB criteria committee evaluated the feedback received in the year of public comment and addressed the issues raised during this period.



**Proposed Criteria for Accrediting Computing Programs**  
Effective for Reviews during the 20XX-20YY Accreditation Cycle  
*Version of July 15, 2017 – No Markups*

The criteria for accreditation are in two sections.

**General Criteria** – General Criteria apply to all programs accredited by an ABET commission. Each program accredited by an ABET commission must satisfy every criterion that is in the General Criteria for that commission.

**Program Criteria** – The Program Criteria provide discipline-specific accreditation criteria. Programs must show that they satisfy all of the specific Program Criteria implied by the program title. Any overlapping requirements need be satisfied only once.

Definitions

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 knowledge, skills, 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. 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.

**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. Evaluation results in decisions and actions regarding program improvement.



## General Criteria 3 and 5

### **Criterion 3 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:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
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.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

### **Criterion 5 Curriculum**

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 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:

1. Techniques, skills, and tools necessary for computing practice.
2. Principles and practices for secure computing.
3. Local and global impacts of computing solutions on individuals, organizations, and society.



**Proposed  
Program Criteria  
Computer Science and  
Similarly Named Computing Programs**

**Lead Society: CSAB**

These program criteria apply to computing programs using computer science or similar terms in their titles.

**3. Student Outcomes**

In addition to outcomes 1 through 5, graduates of the program will also have an ability to:

6. Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]

**5. Curriculum**

The curriculum requirements specify topics, but do not prescribe specific courses. These requirements are:

- 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.
  2. Substantial coverage of at least one general-purpose programming language.
  3. Exposure to computer architecture and organization, information management, networking and communication, operating systems, and parallel and distributed computing.
  4. The study of computing-based systems at varying levels of abstraction.
  5. A major project that requires integration and application of knowledge and skills acquired in earlier course work.
- 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.
- 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.

**6. Faculty**

Some full-time faculty members must have a Ph.D. in computer science.



**Proposed  
Program Criteria  
Information Systems and  
Similarly Named Computing Programs**

**Lead Society: CSAB**

These program criteria apply to computing programs using information systems or similar terms in their titles.

**Definition**

**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.

**3. Student Outcomes**

In addition to outcomes 1 through 5, graduates of the program will also have an ability to:

6. Support the delivery, use, and management of information systems within an information systems environment. [IS]

**5. Curriculum**

The curriculum requirements specify topics, but do not prescribe specific courses. These requirements are:

- 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.
- 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.
- c. Quantitative analysis or methods that must include statistics.

**6. Faculty**

Some full-time faculty members, including those responsible for the information systems curriculum development, must hold a terminal degree with a program of study in information systems.



**Proposed  
Program Criteria  
Information Technology and  
Similarly Named Computing Programs**

**Lead Society: CSAB**

These program criteria apply to computing programs using information technology or similar terms in their titles.

**3. Student Outcomes**

In addition to outcomes 1 through 5, graduates of the program will also have an ability to:

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]

**5. Curriculum**

The curriculum requirements specify topics, but do not prescribe specific courses. The curriculum must include coverage of fundamentals and applied practice in the following:

- a. The core information technologies of human-computer interaction, information management, programming, web systems and technologies, and networking.
- b. System administration and system maintenance.
- c. System integration and system architecture.