

Program Standards for Computer Science

csps0.02 - 010804

Based on November 14, 2003 version of CAC Draft General Standards

I. Objectives, Outcomes and Assessment

General Standards

- I-1. The program must have documented, measurable objectives.
- I-2. The program must have documented, measurable expected outcomes for graduating students.
- I-3. Documented processes must be in place to periodically review the program relative to its objectives and expected outcomes.
- I-4. The assessment process must involve the collection, documentation and evaluation of relevant data.
- I-5. The assessment process must take into account the needs of the program's various constituencies.
- I-6. The results of the program's assessments must be used to develop and implement plans for program improvement.
- I-7. The assessment process must include planned periodic review of the program's objectives and expected outcomes.
- I-8. The results of the program's assessments and the actions taken based on the results must be documented.

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None

II. Student Support

General Standards

- II-1. Courses must be offered with sufficient frequency for students to complete the program in a timely manner.
- II-2. Courses must be structured to ensure effective interaction between instructors and students.
- II-3. Timely, qualified advising on program completion, course selection and career opportunities must be available to all students.
- II-4. There must be established standards and procedures to ensure that graduates meet the requirements of the program.
- II-5. There must be established standards and procedures regarding the acceptance of courses taken elsewhere.

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None

III. Faculty Qualifications

General Standards

III-1. Each faculty member must remain abreast of current developments in the discipline.

III-2. The collective interests and qualifications of the faculty members must be sufficient to teach the courses and to plan and modify the courses and curriculum.

III-3. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline or a closely related field.

III-4. Some full-time faculty members must hold a terminal degree appropriate to the discipline.

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III-1cs. All faculty members must have a level of competence that would normally be obtained through graduate work in computer science.

III-2cs. Some faculty members must have a PhD in computer science.

IV. Faculty Size and Workload

General Standards

IV-1. There must be enough full-time faculty members with primary commitment to the program to provide continuity and stability.

IV-2. Full-time faculty members must oversee all course work.

IV-3. Full-time faculty members must cover most of the total classroom instruction.

IV-4. All full-time faculty members must have sufficient time for scholarly activities and professional development.

IV-5. Where faculty members have advising duties, such duties must be a recognized part of their workload.

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IV-1.cs Faculty members assigned to the computer science program must have the appropriate authority for the creation, delivery, evaluation, and modification of the computer science program.

IV-2 cs Where faculty members install and maintain computing resources and laboratories, such duties must be a recognized part of their workload.

V. Curriculum

General Standards

Curriculum standards are specified in terms of semester hours of study.

Thirty semester hours generally constitutes one year of full-time study and is equivalent to 45 quarter- hours.

- V-1. The program's requirements must be consistent with the documented objectives of the program.
- V-2. The program's requirements must enable students to meet the program's expected outcomes.
- V-3. The curriculum must have at least 40 semester-hours of study in the discipline, at least 30 of which involve topics in computing.
- V-4. The curriculum must stress fundamental concepts and underlying principles appropriate to the discipline, including advanced topics.
- V-5. Required coursework must include coverage of mathematics, appropriate to the discipline, beyond pre-calculus.
- V-6. Students must become proficient in at least one modern programming language.
- V-7. To broaden the background of the student, the curriculum must include a general education component that is consistent with the program's objectives and expected outcomes.
- V-8. The oral communications skills of the student must be developed and applied in the program.
- V-9. The written communications skills of the student must be developed and applied in the program.
- V-10. There must be sufficient coverage of social and ethical implications of the discipline to give students an understanding of a broad range of issues in this area.
- V-11. Collaborative skills must be developed and applied in the program.

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- V-1cs. The curriculum must include at least 40 semester hours of up-to-date study in computer science topics.
- V-2cs. The curriculum must contain at least 30 semester hours of study in mathematics and science.
- V-3cs. The curriculum must include at least 30 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.
- V-4cs. All students must take a broad-based core of fundamental computer science material consisting of at least 16 semester hours.
- V-5cs. The core materials must provide basic coverage of algorithms, data structures, software design, concepts of programming languages, and computer organization and architecture.
- V-6cs. Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.
- V-7cs. All students must take at least 16 semester hours of advanced course work in computer science that provides breadth and builds on the core to provide depth.
- V-8cs. Students must be exposed to a variety of programming languages and systems.
- V-9cs. Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.

V-10cs. The curriculum must include at least 15 semester hours of mathematics.

V-11cs. The curriculum must include at least 12 semester hours of science.

V-12cs. Course work in science must include the equivalent of a two-semester sequence in a laboratory science for science or engineering majors.

V-13cs. Science course work additional to that specified in Standard V-12cs must be in science courses or courses that enhance the student's ability to apply the scientific method.

VI. Technology Infrastructure

General Standards

VI-1. Each student must have adequate and reasonable access to the systems needed for each course.

VI-2. Documentation for hardware and software must be readily accessible to faculty and students.

VI-3. All faculty members must have access to adequate computing resources for class preparation and for scholarly activities.

VI-4. There must be adequate support personnel to install and maintain the computing resources.

VI-5. Instructional assistance must be provided for the computing resources.

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VI-1cs. There must be an adequate number of support personnel to install and maintain the computing resources including laboratories.

VI-2cs. Instructional assistance must be provided for the computing resources including the laboratories.

VII. Institutional Support and Financial Resources

General Standards

VII-1. Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives and expected outcomes.

VII-2. There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.

VII-3. There must be support and recognition of professional development and scholarly activities.

VII-4. There must be office support consistent with the type of program, level of scholarly activity, and needs of the faculty members.

VII-5. Adequate time must be assigned for the administration of the program.

VII-6. Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.

VII-7. Resources must be provided to acquire and maintain a technology infrastructure that meets the needs of the program.

VII-8. Resources must be provided to support the institutional facilities that meet the needs of the program.

VII-9. There must be evidence that there will be continuity of institutional support and financial resources throughout the period of accreditation.

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VII-1cs. Resources must be provided to acquire and maintain appropriate laboratory facilities that meet the needs of the program.

VIII. Institutional Facilities

General Standards

VIII-1. The library that serves the program must be adequately staffed with professional librarians and support personnel.

VIII-2. The library's technical collection must include up-to-date textbooks, reference works, and publications of appropriate professional and research organizations.

VIII-3. Appropriate systems for locating, obtaining and communicating electronic information must be available.

VIII-4. Classrooms must be adequately equipped for the courses taught.

VIII-5. Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional needs.

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None