GUIDANCE FOR INTERPRETING THE CRITERIA FOR ACCREDITING COMPUTING PROGRAMS

Computing Accreditation Commission

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INTRODUCTION

This document contains guidance for interpreting the Criteria for Accrediting Computer Science Programs and the Criteria for Accrediting Information Systems Programs. Both of these criteria sets are contained in the document *Criteria for Accrediting Computing Programs.*

The *Criteria For Accrediting Computing Programs* includes statements of Intent and specific Standards. The relationship between the Intent and the Standards is explained in that document. This companion document provides institutions and program evaluators with guidance for assessing compliance with the Standards. It should not be regarded as prescriptive but is intended to clarify the Standards.

Guidance statements generally express acknowledged ways to satisfy a Standard. When an institution's approach to meeting the Intent of a Criterion is by satisfying Standards and that approach does not coincide with an associated Guidance statement, it is the institution's responsibility to demonstrate that the program still satisfies the Standard.

Guidance is not comprehensive. Following the Guidance statements associated with a Standard does not guarantee that a Standard is fully satisfied. In addition, many Standards are not addressed in the Guidance.

The section numbers and headings correspond to the section numbers and headings used in the Criteria. Each guidance item is tagged with a number indicating the Standard or Standards that it supports, e.g., [IV-7].

Guidance for Interpreting the Criteria for Accrediting Computer Science Programs

I. Objectives and Assessments

1. Accreditation visits alone do not satisfy the intent of this category. [I-1 through I-6]
2. The program's objectives should be consistent with the mission statement of the administrative unit housing the program. [I-1]
3. Many types of objectives might be relevant to comprehensive, objectives-based program design. Some areas that could be addressed include: student performance, student retention, program growth, areas of curricular specialization or emphasis, faculty research, community and professional outreach, funding, physical space, or laboratory equipment. [I-1, I-2]
4. The program assessment should use information on initial student placement and subsequent professional development. [I-3]
5. The program assessment should include soliciting inputs from students, faculty and computing professionals in industry and government. [I-3]
6. Assessment can produce quantitative and qualitative indicators of the program's progress in meeting its objectives. [I-3, I-4]
7. The scope of the assessments should be chosen to balance costs and benefits. Major comprehensive assessments might occur less frequently if supplemented by more frequent assessments of limited scope. [I-3, I-4]
8. At a minimum, program assessments should be conducted on an annual basis. [I-4]
9. There should be evidence that demonstrates that the results of assessments are used. [I-5, I-6]

II. Student Support

1. Upper division class sizes should not normally exceed 30 students. [II-2]
2. Lower division classes may be larger than upper division classes, but additional measures should be taken to assure effective interaction between faculty/teaching assistants and students in larger sections. [II-2]
3. Materials describing the program requirements should be complete and consistent . [II-3]
4. There should be consistency across the advising processes. [II-4, II-5]
5. The advisory function should be given administrative support such as automated record keeping, articulation agreements, and automated pre-requisite verification. [II-5]

III. Faculty

1. The number of faculty members needed by a program is influenced by factors such as the number of students in the program, the number of courses required by the program, the demand for computer science courses by non-computer science majors, the existence of other programs in which faculty members are involved, and teaching loads. [III-1, III-4]
2. Typically, a program should have a minimum of five FTE faculty members, of which four should be full-time faculty members with primary commitments to the program. [III-1, III-4]
3. In general, a faculty member has primary commitment to the program if the majority of her/his activities are in direct support of the program. [III-1]
4. Qualified instructors other than full-time faculty members, if utilized, should serve a supplemental role. [III-2. III-3]
5. Full-time faculty members should cover at least 70% of the total classroom instruction. [III-3]
6. Some faculty members should regularly contribute to the discipline. [III-4, III-5]
7. In addition to other qualifications, for a faculty member to be considered competent in current computer science, s/he should be able to teach a broad range of fundamental computer science courses and to make a scholarly contribution to the computer science discipline. [III-5, III-6]
8. The equivalent of graduate work in computer science can be demonstrated by relevant research, thesis supervision, a history of attendance at relevant technical conferences, auditing of graduate courses, or extensive software design and development experience. [III-6]
9. A majority of the faculty members should hold terminal degrees. [III-6]
10. At least 25% of the total faculty effort (FTEs) should be devoted to scholarly activities. [III-8]
11. Teaching loads should not exceed the equivalent of 12 semester-hour credits per semester. If they do become that high, the load should not exceed four courses and two preparations per semester. [III-8]
12. The need to remain current in the discipline and the need for professional growth of faculty members, particularly those with high teaching loads, should be addressed. [III-8]
13. A faculty member should not be assigned more than 25 undergraduate advisees without sufficient released time. [III-9]

IV. Curriculum

1. The curriculum should be consistent with widely recognized models and standards. [IV-1 through IV-17]
2. Mathematics material may be covered in courses other than mathematics courses. [IV-2, IV-10, IV-11]
3. Because the computer science major already stresses mathematics, science, and technology, at least 20 of the 30 semester hours of courses intended to broaden the background of the student

should be chosen from areas outside of mathematics, science, computer science, and engineering. [IV-3]

4. The courses taken for broadening the student's background are frequently specified by institutional requirements. [IV-3]
5. Some of the topics in the computer science segment could be covered in courses offered outside the academic unit that administers the computer science program. [IV-5 through IV-9]
6. Analysis and design should include substantial laboratory work, including software development. [IV-7]
7. The advanced courses should include the equivalent of at least one course in each of three advanced areas to provide breadth. Examples of advanced areas include algorithms and data structures, artificial intelligence and robotics, computer networks, computer organization and architecture, database and information retrieval, human-computer communication, numerical and symbolic computation, operating systems, programming languages, software methodology and engineering, and theory of computation. [IV-9]
8. Science course work additional to the two-semester sequence in a laboratory science should be in courses for science or engineering majors or courses with a strong emphasis on quantitative methods. [IV-14]
9. Oral and written communications skills may be developed in any part of the curriculum, but should be applied in computer science courses. [IV-15, IV-16]
10. There should be the equivalent of at least one semester-hour of coverage of social and ethical implications of computing. [IV-17]

V. Laboratories and Computing Facilities

1. The assessment of access to facilities includes consideration of the adequacy of the facilities in "closed" laboratories. Generally, students in closed laboratories should have individual workstations. [V-1]
2. Appropriate programming languages and support software should be available to support the needs of a modern curriculum. [V-1]
3. Systems that are representative of modern, state-of-the-practice computing facilities should be available. [V-1, V-3]
4. Adequate computer network connectivity should be available to faculty and students. [V-1, V-3]
5. Faculty should have access to adequate computing facilities from their offices. [V-3]
6. Depending on the nature of the scholarly activities pursued by the faculty, additional or separate facilities may be needed from those used to support student course work and course preparation. [V-3]

VI. Institutional Support and Financial Resources

1. Sabbatical and other leave programs, reasonable teaching loads, and competitive salaries are important factors in attracting and retaining faculty of high quality. [VI-1]
2. Examples of office support are secretarial services, copy machines, and fax machines. [VI-4]
3. Positive, constructive leadership at the college/school level and in the unit that administers the program are especially important in maintaining the program's quality. [VI-1, VI-6]
4. All levels of administration are relevant to the program. [VI-6]
5. Support for laboratories includes physical space, computing equipment, and associated support personnel. [VI-7]
6. Examples of evidence that there will be continuity of institutional support and financial resources are a history of such support or credible long-range plans. [VI-9]

VII. Institutional Facilities

1. The technical collection should also include a representative number of trade journals. [VII-2]
2. Facilities for printing electronically retrieved information should be available. [VII-3]
3. Some classrooms should have network access. [VII-4]
4. Faculty offices should have adequate space for meeting with students. [VII-5]

Guidance for Interpreting the Criteria for Accrediting Information Systems Programs

I. Objectives and Assessments

1. Accreditation visits alone do not satisfy the intent of this category. [I-1 through I-5].
2. The program's educational objectives should be consistent with the mission of the institution. [I-1]
3. Assessment can produce quantitative and qualitative indicators of the program's progress in meeting its objectives. [I-3, I-5]
4. The program assessment should use information on initial student placement and subsequent professional development. [I-4]
5. The program assessment should include soliciting inputs from students and advice from computing professionals in industry and government. [I-4]
6. At a minimum, programs should conduct assessments on an annual basis. [I-4, I-5]
7. The scope of the assessments should be chosen to balance costs and benefits. Major comprehensive assessments might occur less frequently if supplemented by more frequent assessments of limited scope. [I-4, I-5]
8. Institutions should be able to demonstrate that they use the results of the assessment. [I-5]

II. Students

1. For large classes, additional measures should be taken to assure effective interaction between faculty/teaching assistants and students. [II-2]
2. If Students with special needs are admitted to the program these needs should be addressed. Some ways to address this are tutors, special sections, or challenging individual projects. [II-3]
3. Materials describing the program requirements should be complete and consistent. [II-3]
4. There should be consistency across the advising processes. [II-3, II-4]
5. The advisory function should be given administrative support such as automated record keeping, articulation agreements, and automated pre-requisite verification. [II-4]

III. Faculty

1. Some faculty members should regularly contribute to the discipline. [III-1, III-2, III-4]
2. In addition to other qualifications, for a faculty member to be considered competent in current information systems, s/he should be able to teach a broad range of fundamental information systems courses and to make a scholarly contribution to the information systems discipline. [III-

1, III-2, III-3, III-4]]

3. The equivalent of graduate work in information systems can be demonstrated by relevant research, thesis supervision, a history of attendance at relevant technical conferences, auditing of graduate courses, or relevant work experience. [III-2]
4. A majority of the faculty members should hold terminal degrees in a computer-related field. [III-3]

IV. Curriculum

1. Quantitative analysis material may be covered in courses other than mathematics courses. [IV-3 IV-12]
2. The courses taken for broadening the student's background are frequently specified by institutional requirements. [IV-4]
3. Some of the topics in the information systems segment could be covered in courses offered outside the academic unit that administers the information systems program. [IV-1, IV-4 through IV-9]
4. Programming and systems analysis and design should include laboratory work, including the use of modern software tools. [IV-1, IV-5 through IV-9]
5. The advanced courses should be the equivalent of a course in each of the following areas: systems analysis and design, computer networks, database, and project management. [IV-8]
6. Oral and written skills should be applied in information systems courses. [IV-14]
7. There should be the equivalent of at least one semester-hour of coverage of social and ethical implications of computing. [IV-15]
8. Information Systems Environment. The courses taken for the I.S Environment are to broaden the student's background in the area in which the information systems knowledge is to be applied. For example, in the business environment, the student would take courses in the following areas: management, accounting, organizational behavior, marketing, finance, microeconomics, and macroeconomics. If the program is located in a business school, these course are frequently specified by institutional requirements.

V. Technology Infrastructure

1. Systems that are representative of modern, state-of-the-practice computing facilities must be available. [V-1]
2. The assessment of access to facilities includes consideration of the adequacy of the facilities in "closed" laboratories. Generally, students in closed laboratories should have individual workstations or mobile computing resources. If students do not own systems and the university does not provide them, then adequate space and facilities must be provided. [V-1]
3. Appropriate software tools should be available to support the needs of a modern curriculum. [V-1]

4. Adequate computer network connectivity should be available to faculty and students. [V-1, V-3]
5. Faculty should have access to adequate computing facilities from their offices. [V-3]
6. Depending on the nature of the scholarly activities pursued by the faculty, additional or separate facilities may be needed from those used to support student course work and course preparation. [V-3]
7. Instructional assistance will be available via appropriate means, e.g. help desks, dedicated phone lines, staff support, and/or student assistants.

VI. Institutional Support and Financial Resources

1. Examples of evidence of continuity are a record of continuity or credible long-range plans. [Global]
2. Sabbatical and other leave programs, reasonable teaching loads, and competitive salaries are important factors in attracting and retaining faculty of high quality. [VI-1]
3. Examples of office support are secretarial services, copy machines, and fax machines. [VI-4]
4. Positive, constructive leadership at the college/school level and in the unit that administers the program are especially important in maintaining the program's quality. [VI-1, VI-6]
5. All levels of administration are relevant to the program. [VI-6]
6. Support for laboratories includes physical space, computing equipment, and associated support personnel. [VI-7]

VII. Program Delivery

1. The number of faculty members needed by a program is influenced by factors such as the number of students in the program, the number of courses required by the program, the demand for information systems courses by non-information systems majors, the existence of other programs in which faculty members are involved, and teaching loads. [II-1, VII-1, VII-4]
2. In general, a faculty member has primary commitment to the program if the majority of her/his activities are in direct support of the program. [VII-1]
3. Qualified instructors other than full-time faculty members, if utilized, should serve a supplemental role. [VII-2. VII-3]
4. Full-time faculty members should cover at least 70% of the total classroom instruction. [VII-3]
5. At least 25% of the total faculty effort (FTEs) should be devoted to scholarly activities. [III-8]
6. Teaching loads should not exceed the equivalent of 12 semester-hour credits per semester. If they do become that high, the load should not exceed four courses and two preparations per semester. [III-8]
7. The need to remain current in the discipline and the need for professional growth of faculty members, particularly those with high teaching loads, should be addressed. [III-8]
8. The number of undergraduate advisees assigned to a faculty member should be reasonable or

sufficient released time should be provided. [III-9]

VIII. Institutional Facilities

1. The technical collection should also include a representative number of trade journals. [VII-2]
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