ACM Two-Year College Education Committee
Computing Curricular Overview
2006

The ACM Two-Year College Education Committee has produced associate-degree curricula guidelines that correspond to the five major disciplines now clearly identifiable within the realm of *computing*. We characterize the five computing disciplines as follows:

Computer Science ... involves design and innovation developed from computing principles. This curriculum focuses on the theoretical foundations of computing, algorithms, and programming techniques, as applied to operating systems, artificial intelligence, informatics and the like.

Computer Engineering ... involves the design and construction of processor-based systems comprised of hardware, software, and communications components. This curriculum focuses on the synthesis of electrical engineering and computer science as applied to the design of systems such as cellular communications, consumer electronics, medical imaging and devices, alarm systems and military technologies.

Software Engineering ... involves the design, development and testing of large, complex, and safety-critical software applications. This curriculum focuses on the integration of computer science principles with engineering practices as applied to constructing software systems for avionics, healthcare applications, cryptography, traffic control, meteorological systems and the like.

Information Systems ... involves the application of computing principles to business processes, bridging the technical and management fields. This curriculum focuses on the design, implementation and testing of information systems as applied to business processes such as payroll, human resources, corporate databases, ecommerce, finance, customer relations management and decision support.

Information Technology ... involves the design, implementation and maintenance of technology solutions and support for users of such systems. This curriculum focuses on crafting hardware and software solutions as applied to networks, security, client-server and mobile computing, web applications, multimedia resources, communications systems, and the planning and management of the technology lifecycle.
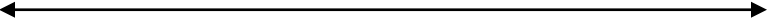
Clearly the three computing disciplines of CS, CE and SE share much in common, arising from the scientific and engineering foundations of these disciplines. Similarly, the computing disciplines of IS and IT find common ground in the business-oriented nature of these fields. There are commonalities in the associate-degree curriculum guidelines that reflect these relationships among the five computing disciplines.

For example, the three-course introductory programming sequence is common to the CS, CE and SE guidelines, as is the two-course discrete mathematics sequence. Computer Organization and Architecture can be shared between CS and CE students. Programming and elective courses are common between the IS and IT programs of study.

These guidelines also are sensitive to the special considerations unique to the two-year college environment, including the need to
- serve under-prepared students;
- limit course proliferation and be efficient in class offerings;
- offer students opportunities both for transfer into baccalaureate programs and for direct entry into the workplace;
- augment the technical curriculum with general education courses;
- ensure students have the interpersonal and communication skills necessary to succeed in today's global society;
- support student exploration of various educational and career choices;
- serve the needs of local business and industry for a trained workforce; and
- provide lifelong learning for personal and professional enrichment.

The associate-degree curricular guidelines fully detail programs that prepare students in the five computing disciplines. Hyperlinks to these guidelines are contained within the following table.

COMPUTING DISCIPLINES				
ASSOCIATE-DEGREE CURRICULAR GUIDELINES				
2003 Guidelines for Associate-Degree Programs in **Computer Science**	2007 Guidelines for Associate-Degree Transfer Curriculum in **Computer Engineering**	2005 Guidelines for Associate-Degree Transfer Curriculum in **Software Engineering**	2004 Guidelines for Associate-Degree Programs in **Information Systems**	2000 Guidelines for Associate-Degree Programs to Support Computing in a Networked Environment **(Information Technology)**
Emphasis on Theory	⟵――――――――――――――――⟶			Emphasis on Application

For further discussion of these five disciplines, see the ACM publications: Computing Curricula Overview Report and Computing Degrees and Careers.