



Association for  
Computing Machinery

*Advancing Computing as a Science & Profession*

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## **ACM Issues Guidelines to Strengthen Transition between Community College and Four-Year Degree Computer Science Programs**

### **Goals Include Fostering More Diversity in Computing Field**

**NEW YORK, NY**, September 19, 2017 – The Association for Computing Machinery’s (ACM) Committee for Computing Education in Community Colleges (CCECC) has issued a new set of curricular guidelines aimed at ensuring that the computer science education that students receive in community colleges will effectively prepare them to earn Bachelor’s degrees at four-year institutions. The new publication, [Computer Science Curricular Guidance for Associate-Degree Transfer Programs with Infused Cybersecurity](#), was developed over a two-year period and included input from more than 70 community college and university educators, as well as industry-based practitioners.

Well-designed transfer guidelines offer a range of benefits. For students in Associate programs, shared guidelines prepare them to smoothly transition to baccalaureate programs and make it likely that they will not have to repeat courses that they have already taken. For professors and administrators, widespread agreement on what courses students should be taking and how they will be assessed eliminates confusion and makes instruction easier. And for employers, the guidelines increase the chance that CS graduates will be “workforce ready.” According to the [Bureau of Labor Statistics](#), by 2024, nearly 4.6 million high-wage jobs will be in CS and related fields, yet it is predicted that there will not be enough qualified applicants to meet this demand.

The new transfer guidelines are based on [The Computer Science Curricula 2013](#), a joint publication of ACM and the IEEE Computer Society which outlines suggested course content in 18 computing Knowledge Areas for undergraduate education. The 2013 Curricula lists suggested coursework in subdisciplines including Computational Science, Operating Systems, Programming Languages, and Software Engineering.

The 2017 CS Transfer Guidelines curriculum started with the 2013 Curricula and included contemporary cybersecurity concepts appropriate for the first two years of a baccalaureate degree. “The last time ACM issued guidelines for Associate degree transfer programs was 2009,” explained CCECC member and past chair Elizabeth K. Hawthorne, a Senior Professor at Union County College in New Jersey. “The new guidelines are designed to keep students current with the rapidly changing demands of colleges and the workplace. For example, because almost every career path open to a computing student today

encompasses some aspect of security, we have woven cybersecurity education throughout the core Body of Knowledge.” The 2017 CS Transfer Guidelines document also provides educators with a roadmap of assessment metrics, or approaches for determining how well students have learned the coursework.

In the US, the new transfer guidelines also support an important industry-wide goal of attracting more underrepresented minorities, including African-Americans and Hispanics, to the computing field.

Community colleges typically have more diverse student bodies than other higher education institutions. For example, a [2016 study by the American Association of Community Colleges](#) found that, in a given year, 57 percent of Hispanic undergraduates and 52 percent of African-American undergraduates are educated at community colleges. At the same time, research indicates that not enough of those students who are studying CS are choosing to pursue a Bachelor’s degree. A similar [report by Google](#) identified insufficient information on pathways and requirements as major reasons why students in Associate degree programs do not pursue Bachelor degrees in computer science.

“The network of community colleges is a great untapped resource for bringing in new talent to meet the growing demands of the workforce,” added CCECC member and chair Cara Tang, a Professor at Portland Community College. “But not enough of these students are staying on the path toward Bachelor degrees. These new guidelines will give students a holistic overview of their education in computer science and hopefully steer them along pathways toward Bachelor degrees. Community college educators also need to do a better job of conveying all of the wonderful opportunities that the field offers. But these guidelines are an important step.”

In developing its curricular guidance in computer science education, the ACM CCECC seeks feedback from educators in countries around the world including Australia, China, India, Turkey, the United Kingdom and countries across the European Union.

#### **About ACM CCECC**

The ACM Committee for Computing Education in Community Colleges (CCECC) <https://ccecc.acm.org/> serves and supports community and technical college educators in all aspects of computing education. Officially chartered in 1991 as a standing committee of the ACM Education Board, the CCECC is concerned with computing education at associate-degree granting colleges in the United States and similar post-secondary institutions throughout the world. The Committee engages in curriculum and assessment development and community building, and advises on public policy and advocacy in service to this sector of higher education.

#### **About ACM**

ACM, the Association for Computing Machinery [www.acm.org](http://www.acm.org), is the world’s largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field’s challenges. ACM strengthens the computing profession’s collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

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