



# ACM Associate-Degree IT Curricular Guidance

## ACM Committee for Computing Education in Community Colleges (CCECC)



capspace.org

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### How to Use this Guidance

The learning outcomes in this guidance represent core competencies that a student in any IT-related program should be expected to demonstrate. The outcomes should thus be seen as foundational for an associate-degree IT program, and not as specifying a complete program. Curricula for specific IT programs (e.g., networking and programming) would be expected to go further in their primary area.

### Recommended Uses

- Creating program outcomes and developing curriculum
- Facilitating program and course articulation
- Establishing authoritative source for program and institutional accreditation
- Mapping to industry academies and certifications
- Complying with government-sponsored frameworks
- Interacting with local advisory boards
- Crafting course and program assessments
- Designing placement testing

### Process

Directed by the ACM Education Board, the CCECC produced curricular guidance for associate-degree IT programs.

- **Phase 1: Determine need for & nature of guidance 2011 - 2012**
  - Compelling need for IT curricular guidance for the associate-degree level
  - Guidance should be built on a framework of core learning outcomes
  - Influenced by current and future needs of business and industry, certifications, related curricula, government and standards bodies, new and emerging technology, international perspectives
  - Accompanied by meaningful evaluation metrics
- **Phase 2: Create the curricular guidance 2012 - 2014**
  - Review related existing guidance and ontologies
  - Convene subject matter experts from business and industry, two-year college faculty, and assessment experts to draft core IT learning outcomes and assessment rubrics
  - Strawman draft
  - Map outcomes to related curricula and ontologies
  - Ironman draft
  - Solicit champions and course examples
  - Final report Q2 2014

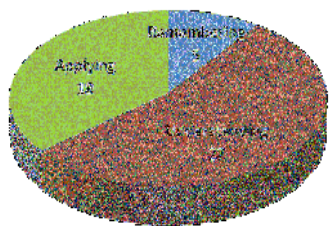
### IT Curricular Guidance

1. 50 student learning outcomes of core IT competencies
2. Assessment rubric for each outcome
3. Mappings to other curricula and frameworks
  - U.S. Dept. of Labor IT Competency Model
  - European e-Competence Framework
  - ACM IT Baccalaureate Guidelines
  - CSTA Computer Science Standards
  - Others

### Few Core Learning Outcomes

Demonstrate the techniques of defensive programming and secure coding.
Produce simple database queries.
Differentiate among data types, data transfer protocols and file characteristics specific to targeted use.
Summarize the flow of data through a network scenario.
Use a programming or a scripting language to share data across an integrated IT system.
Implement an application of virtualization.
Produce documentation appropriate to an Information Technology task that conforms to the requisite format and syntax.
Demonstrate professional behavior in response to an ethically-challenging scenario in computing.
Summarize the role of IT in supporting the mission and goals of an organization.

### Bloom's Levels Distribution



Distribution of the 50 Learning Outcomes across Bloom's levels

### Outcomes with Assess Rubric

Learning Outcome	Below Expectations	Meets Expectations	Exceeds Expectations
Demonstrate the techniques of defensive programming and secure coding.	Lists strategies for creating secure code.	Explains the techniques of defensive programming and secure code, such as input validation and avoiding buffer overflows.	Implements programming solutions using defensive programming and secure coding techniques.
Use communication, negotiation, and collaboration skills as a member of a diverse team.	Uses communication, negotiation, and collaboration skills at a subpar level within a diverse team.	Uses communication, negotiation, and collaboration skills as a member of a diverse team.	Analyzes interpersonal interactions to improve collaboration within a diverse team.
Describe the layers, protocols and components of the OSI model.	Lists the layers, protocols or components of the OSI model inaccurately or insufficiently.	Identifies the layers, names the major protocols and describes common components of the OSI model.	Explains the interaction of the OSI model layers in the encapsulation process.

### Call for Champions

Champions are organizations that appreciate the importance of robust associate-degree IT programs, make a commitment to the academic foundation of IT students, and promote education that meaningfully prepares graduates as future employees and practitioners.

If you are interested in having your organization listed as a champion, please contact us at [capspace.org/contactus/](http://capspace.org/contactus/)

#### Champions to date:

Google	Juniper Networks	CSTA
EMC <sup>2</sup>	Cisco	Dell
NetApp	Citrix	Oracle
MPICT - NSF ATE ICT Center	Union County College	Bluegrass Community and Technical College

### Call for Course Examples

Examples of college courses that align with the core IT learning outcomes will be included in this guidance.

If you are interested in having your college's IT course(s) be part of this growing repository, visit [capspace.org/correlation/](http://capspace.org/correlation/) for detailed instructions and correlation template.

