

Program Student Learning Outcomes For Computer Science

Subject: Program Student Learning Outcomes for Computer Science

Last updated: May 22, 2009 Course assessment matrix updated for AY 08-09

General: There are 11 program student learning outcomes for Computer Science Majors. These are listed under the major categories of Oral & Written Communication, Societal and Ethical Concerns, Theory & Research, and Analysis and Design.

Oral & Written communication

1. Students will communicate effectively, both orally, in writing, and via multimedia and will have experience communicating to groups.
2. Students will work in teams as both a leader and participant.
3. Students will choose and produce appropriate artifacts of the analysis, design, and project management processes.

Societal and ethical concerns, "the profession"

4. Students will evaluate professional decisions based on an understanding of ethical issues, especially in terms of the ACM/IEEE computing professional code of ethics.

Theory & Research

5. Students will comprehend and articulate the fundamental concepts, mathematical foundations and theories of the discipline.
6. Students will describe the fundamentals of computer networks, architecture and operating systems.
7. (Optional) Students will have the opportunity to formulate a research question and investigate an answer by applying research methods appropriate to the field.
8. Students will be equipped with the knowledge and skills to remain current in the field and engage in life-long learning.

Analysis & Design

9. Students will be able to solve problems using procedural, functional, and object oriented programming paradigms.
10. Students will properly select and implement algorithms and data structures using appropriate programming languages.
11. Students will analyze, design, and implement computer software systems based on best practices and standards, using appropriate life cycle methodologies and project management techniques.

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Program Student Learning Outcomes Mapping to CSC Course Matrix

Table 1 lists along the top row the courses that contribute to meeting a core or elective requirement for a BA or BS in Computer Science. Column 1 lists the 11 program student learning outcomes. If a cell is not blank then that the course listed at the top of the column has learning outcomes that contribute to meeting the program student learning outcome for that row. A non blank cell will have either a date or an X. A date indicates the academic year that the course has been part of a formal program assessment against the associated program student learning outcome. An X indicates that the course has not yet been programmatically assessed against the program student learning outcome.

| Courses taken for the BA or BS in Computer Science | | | | | | | | | | | | | | | | | | |
|----------------------------------------------------|--------|--------------|--------|--------|--------|--------------|--------|--------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | CSC130 | CSC230 | CSC330 | CSC331 | CSC335 | CSC342 | CSC442 | CSC462 | CSC410 | CSC420 | CSC430 | CSC431 | CSC499 | MTH112 | MTH121 | MTH221 | MTH206 | MTH306 |
| 1 | | | | | 06-07 | | | | X | 06-07 | | X | 06-07 | | | | | |
| 2 | X | <u>07-08</u> | X | X | X | <u>07-08</u> | X | | <u>07-08</u> | X | | X | | | | | | |
| 3 | | | | | X | X | X | 08-09 | X | 08-09 | | X | X | | | | | |
| 4 | 05-06 | | X | | | X | | 05-06 | X | | | X | | | | | | |
| 5 | X | X | X | X | X | X | | X | X | X | X | | | X | X | X | X | X |
| 6 | | | X | | | 05-06 | X | | | | | | | | | | | |
| 7 | | | | | | | X | | | | | X | 06-07 | | | | | |
| 8 | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| 9 | 08-09 | X | 08-09 | X | 08-09 | 08-09 | | X | X | 08-09 | X | X | | | | | | |
| 10 | | <u>07-08</u> | | X | X | <u>07-08</u> | X | X | <u>07-08</u> | X | X | X | | | | | | |
| 11 | | | X | | X | | X | X | X | X | X | X | | | | | | |

Table 1: Course matrix mapping of each CSC course to the program student learning outcomes that it contributes to meeting.

Program Outcome Assessment Plan

Table 2 shows the program student learning outcome plan that was established in 2005 to assess two learning outcomes per year until completion in AY 2010-2011. During AY 08-09, Program Learning Outcomes 3 and 9 are being assessed.

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| Academic Year of Assessment | Program Learning Outcomes Assessed |
|------------------------------------|-------------------------------------------|
| 2005-2006 | 4 and 6 |
| 2006-2007 | 1 and 7 |
| 2007-2008 | 2 and 10 |
| 2008-2009 | 3 and 9 |
| 2009-2010 | 5 and 11 |
| 2010-2011 | 8 |

Table 2: Program learning outcomes assessment plan

Assessment Format

The course coordinator of the courses selected to be assessed against a program student learning objective must provide the assessment plan in a pre-course assessment document submitted at a formal department assessment before the semester and in a post course assessment document submitted at the formal department assessment after the semester. All assessment documents are kept by the department chair on the department's internal web site.