

**University of Wisconsin-Milwaukee
Bachelor of Science in Computer Science Program
Assessment Plan
Adopted February 27, 2009**

A. Overview of Assessment Process

Assessment of the Bachelor of Science in Computer Science program will be performed in three-year cycles. The first full review will occur in the 2010-2011 academic year, commencing in the Fall semester. A second full review will be conducted in the 2013-2014 academic year. The three year cycle has been chosen to allow sufficient time for changes made in response to one assessment to be implemented and to begin to show effects for the subsequent assessment. This schedule also fits neatly into the hoped-for six-year period of ABET/CAC accreditation reviews.

Because this Self Study is part of the program's first accreditation effort, some of the Self Study data has not yet been reviewed by the Computer Science faculty. So, in order to take advantage of this new information and to bootstrap the continuous improvement process, the Computer Science faculty will conduct an initial assessment using the Self Study data in the 2008-2009 academic year.

A diverse set of assessment activities will be conducted. Some activities will be conducted during each instruction term, while others will occur yearly or only every three years. Responsibility for ensuring that these activities occur will generally lie with the Computer Science assessment coordinator, though some are managed directly by the College.

B. Assessment Activities

The following activities will be conducted to support assessment of the program and its courses. This material is primarily taken from a CEAS Assessment Plan used by the engineering programs.

- I. Student Evaluations (end-of-course evaluation form; a copy of the form is provided in Appendix A on page 58.)

The CEAS student evaluation form will be administered in each course section each semester. The averages of all questions will be computed. Each instructor will be provided with evaluation form data summaries, and the original evaluation forms will be made available for instructor review. Instructors are responsible for the careful consideration of student evaluations. Poor performance as judged by the student evaluations will be addressed by the Associate Dean. Curricular modifications arising from student comments will be documented.

- II. Program Evaluation by Graduating Seniors (Senior Exit Survey; a copy of a draft survey is provided in Appendix A on page 62.)

All graduating seniors will be asked to assess the program and CEAS overall with regard to various factors pertaining to the quality of their experience at UWM. CEAS administration and designated faculty will be responsible for carefully reviewing these evaluations, and for bringing potential action areas to the appropriate faculty groups for consideration. Results of this assessment activity will be kept in the

Dean's office and by the assessment coordinator. Senior exit surveys are geared principally towards assessing Program Outcomes.

- III. Program Evaluation by 3-to-5-Year Alumni (Alumni Survey; a copy of the survey is provided in Appendix A on page 60.)

Every three years, a brief, carefully designed questionnaire will be mailed to all such alumni to obtain opinions concerning the education they received at UWM. Personal interviews with alumni may be considered instead of, or in addition to, mailed questionnaires. CEAS administration and designated faculty will be responsible for carefully reviewing these evaluations, and for bringing potential action areas to the appropriate faculty groups for consideration. Results of this assessment activity will be kept in the Dean's office and by the assessment coordinator. Alumni surveys are geared principally towards assessing Program Educational Objectives.

- IV. Evaluation by Computer Science Industrial Advisory Council

The Computer Science Industrial Advisory Council will evaluate the program annually to determine whether the program is meeting its objectives. The council will also provide input on program outcomes and other curricular matters. When the department is considering changes to program objectives and outcomes, these changes will be discussed explicitly with the IAC. Meeting minutes will serve as written comments providing input to the department. Results of this assessment activity will be kept by the assessment coordinator.

- V. Construction of an Assessment Matrix

The Computer Science faculty will construct and maintain an assessment matrix of departmental courses and college courses taken by majors versus stated departmental outcomes. The matrix will reflect which outcomes are satisfied by each course. Departmental faculty will address curricular deficiencies indicated by the assessment matrix. The assessment matrix is shown in Table 5.1 on p. 36 of this Self-Study report.

- VI. Meeting with Current Students

Departmental representatives will meet yearly with students (typically during a scheduled class period of EAS 200, or at an IEEE-CS Student Society meeting) to get feedback on strengths and weaknesses of the program. When the department is considering changes to program objectives and outcomes, these changes will be discussed explicitly with the students. The departmental representatives will write a short report on the feedback they receive. These reports will be kept by the assessment coordinator.

- VII. Transcript data analysis

Every three years, the assessment coordinator will obtain transcripts and advising reports on at least one full year of graduating students. The assessment coordinator will compile data on the graduates' course grades and progress in the program in a manner suitable for review by program faculty. This transcript data will be used to assess how the courses used by the program fit together and whether the student effort they require is balanced.

- VIII. Program outcome assessment data

Every semester, a sample of required courses will require students to perform activities that can be used to directly assess program outcomes. The activities may be homework assignments, tests, papers or oral presentations and they will be part of the students' graded work in the courses. In addition to the normal grading of these activities as part of the course, the activities will also be marked relative to the appropriate Program Outcome using a Does-not-meet/Meets/Exceeds scale. The course instructor will also write a short set of notes discussing the results. In order to keep the workload for this task reasonable, this assessment will be performed on a three-semester rotation.

Every three years, the Computer Science Faculty will review this Program Outcome assessment data and make appropriate changes to the courses and curriculum in order to ensure that the Program Outcomes are met.

In addition to CEAS assessment efforts, the university administers a survey to all graduating seniors. The results of this survey can be found online and will be considered by the Computer Science faculty. The URL for the survey results is:

http://www.uwm.edu/Dept/Acad_Aff/assessment/studentsurveys.html

The following three tables provide more specific information on the assessment process.

- Table 1 summarizes the frequency of assessment activities and the responsible party. It is followed by a list of assessment activities for the years 2008-2014.
- Table 2 shows how the material in each required course maps to the program outcomes.
- Table 3 presents the schedule of outcome-oriented assessments that will be followed from Spring 2009 to Spring 2012. This schedule will be revisited when the Computer Science faculty reviews the program outcome data in September 2010. Some important points to note are:
 - Several courses that assess Outcome #1, which addresses fundamental concepts, are too advanced to actually teach fundamentals. However, they naturally require students to use fundamental skills, so they are appropriate assessment points for the outcome.
 - All but one of the courses in which the assessment is performed are at the junior or senior level. The exception is the new course, CompSci 361, which is used because it requires a paper on societal effects of computing, and is a sophomore/junior course.

Table 1: Assessment Activities

Assessment Activity	Frequency	Responsible Party
End-of-course student evaluations	Every semester	Course instructor
Senior Exit Survey	Every semester	Assessment coordinator
Alumni survey	Every three years	Assessment coordinator
IAC Report	Every year	Computer Science chair; Assessment coordinator
Assessment matrix	Updated as necessary; Evaluated every three years	Assessment coordinator
Meeting with current students	Every year	Computer Science chair; Assessment coordinator
Transcript data analysis	Every three years	Assessment coordinator
Program outcome assessment data	Collected every semester Reviewed every three years	Assessment coordinator and program faculty

Computer Science Assessment Schedule, 2008-2014

2008-2009

September 2008: Initial faculty assessment process (review metric data from Self Study, propose curricular changes)
 November 2008: meeting with current students, IAC report
 December 2008: end-of-course student evaluations, senior exit survey, collect program outcome assessment data
 May 2009: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

2009-2010

November 2009: meeting with current students, IAC report
 December 2009: end-of-course student evaluations, senior exit survey, collect program outcome assessment data
 April 2010: Alumni survey
 May 2010: end-of-course student evaluations, senior exit survey, collect program outcome assessment data
 July 2010: Transcript data analysis

2010-2011

September 2010: Faculty assessment process (summarize assessment results, review/revise metrics, collect metric data, review/revise Program Objectives and Outcomes, propose curricular changes)
 November 2010: meeting with current students, IAC report
 December 2010: end-of-course student evaluations, senior exit survey, collect program outcome assessment data
 May 2011: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

2011-2012

November 2011: meeting with current students, IAC report
 December 2011: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

May 2012: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

2012-2013

November 2012: meeting with current students, IAC report

December 2012: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

April 2013: Alumni survey

May 2013: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

July 2013: Transcript data analysis

2013-2014

September 2013: Faculty assessment process (summarize assessment results, review/revise metrics, collect metric data, review/revise Program Objectives and Outcomes, propose curricular changes)

November 2013: meeting with current students, IAC report

December 2013: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

May 2014: end-of-course student evaluations, senior exit survey, collect program outcome assessment data

Table 2: Mapping of Course Requirements to Program Outcomes

Required Courses	Program Outcomes						
	1	2	3	4	5	6	7
CompSci 201 Introductory Programming	X						
CompSci 251 Intermediate Programming	X	X					
CompSci 315 Introduction to Computer Organization and Assembly Language Programming	X	X					
CompSci 317 Discrete Information Structures	X		X				
CompSci 337 Systems Programming		X					
CompSci 351 Data Structures and Algorithms	X	X	X				
ElecEng 354 Digital Logic	X		X				
CompSci 361 Introduction to Software Engineering	X	X		X		X	
CompSci 417 Introduction to the Theory of Computation	X		X				
CompSci 431 Programming Language Concepts	X	X					
CompSci 458 Computer Architecture	X	X					
CompSci 520 Computer Networks			X				
CompSci 535 Algorithm Design and Analysis		X	X				
CompSci 537 Introduction to Operating Systems		X	X				
CompSci 557 Introduction to Databases		X					X
CompSci 595 Capstone Project	X	X	X	X			X
EAS 200 Professional Seminar						X	X
Technical Electives		X	X				X
General Education Courses					X		

Table 3: Schedule of Outcome assessments in CompSci courses. Each cell of the table lists the outcomes that will be assessed in a particular course in a particular semester. Cells are empty for semesters in which no outcome assessment will be performed in a particular course.

Required Courses	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012
CompSci 361 Introduction to Software Engineering (starts Fall 2010)				4,6	1,2	4,6	1,2
CompSci 417 Introduction to the Theory of Computation		1,3			1,3		
CompSci 431 Programming Language Concepts			1,2			1,2	
CompSci 458 Computer Architecture	1,2			1,2			1,2
CompSci 520 Computer Networks	3		3		3		3
CompSci 535 Algorithm Design and Analysis		1,2,3		1,2,3	1,2,3		1,2,3
CompSci 537 Introduction to Operating Systems		2,3		2,3		2,3	
CompSci 557 Introduction to Databases	2,7		2,7		2,7		2,7
CompSci 595 Capstone Project (starts Fall 2009)		2,4,7	3,4,7	1,4,7	2,4,7	3,4,7	1,4,7