MSU Departmental Assessment Plan
2011-2013

Department: Computer Science

Department Head: John Paxton

Assessment Coordinator: John Paxton

Degrees/Majors/Options Offered by Department

- B.S. in Computer Science
  - Interdisciplinary Option
  - Professional Option
- M.S. in Computer Science
- Ph.D. in Computer Science

Department of Computer Science
Montana State University

Student Outcomes Assessment Plan
Professional and Interdisciplinary Options
Spring 2011

The Department of Computer Science BS degree is accredited by ABET. It has a Mission Statement that outlines clear and precise objectives and outcomes. In accordance with ABET and the College of Engineering, the department defines **Program Educational Objectives** to be skills that we expect our graduates to have 5 years after graduation, and **Program Outcomes** to be the skill set that students have at the time of graduation.

The accreditation body also requires that the department regularly assess its success in achieving these goals and objectives. The evaluation cycle is described below and illustrates how students, an industry advisory board, employers and graduates are all involved in the evaluation process.

Mission Statement

The Computer Science Department at Montana State University supports the Mission of the College of Engineering and the University through its teaching, research, and service activities. The Department educates undergraduate and graduate students in the principles and practices of computer science, preparing them for computing careers and for a lifetime of learning.

Vision Statement

The Computer Science Department at Montana State University will be a leader in computing innovation through excellence in undergraduate and graduate education, active research programs, and the dissemination of knowledge. The Department will leverage both the international and interdisciplinary nature of computing. The Department will offer a collegial environment that helps faculty, staff, and students achieve excellence in pursuit of the department's mission.

Program Education Objectives: After graduation, graduates will:

1. be well prepared for a professional career or graduate studies in computer science.
2. be able to apply computer science principles to real-world problems.
3. have the skills to work effectively within an organization
4. understand ethical, professional and social issues related to the practice of their profession.
5. engage in continuous learning.

Program Outcomes: At the time of graduation, students will have:

a. an ability to apply knowledge of computing and mathematics appropriate to the discipline
b. an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
c. an ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs
d. an ability to function effectively on teams to accomplish a common goal
e. an understanding of professional, ethical, legal, security, and social issues and responsibilities
f. an ability to communicate effectively with a range of audiences
g. an ability to analyze the local and global impact of computing on individuals, organizations and society
h. recognition of the need for, and an ability to engage in, continuing professional development
i. an ability to use current techniques, skills, and tools necessary for computing practices
j. an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices
k. an ability to apply design and development principles in the construction of software systems of varying complexity

Assessment Tools

The following table shows the program educational objectives and program outcomes that each assessment tool measures. The first three tools make indirect measurements. The final three tools make direct measurements.

	1	2	3	4	5	a	b	c	d	e	f	g	h	i	j	k
Alumni Survey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Employer Survey	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Graduating Sr. Survey						X	X	X	X	X	X	X	X	X	X	X
Major Field Test						X	X	X							X	X
Custom Test						X	X			X		X	X	X		X
Portfolio						X	X	X		X			X	X	X	X

The following table shows how often each tool is used and a schedule for its usage.

	How Often	Inaugurated	Most Recent	Next	Next
Alumni Survey	Every 3 years	Jan. 2009	Jan. 2009	Jan. 2012	Jan. 2015
Employer Survey	Every 3 years	Jan. 2009	Jan. 2009	Jan. 2012	Jan. 2015
Graduating Senior Survey	Annually	April 2005	April 2010	April 2011	April 2012
Major Field Test	Each semester	April 2005	Dec. 2010	April 2011	Dec. 2011
Custom Test	Each semester	April 2009	Dec. 2010	April 2011	Dec. 2011
Portfolio	Annually	May 2009	May 2010	May 2011	May 2012

The following table shows the intended audience for each tool, how the tool is administered and who has responsibility for the tool.

	Audience	How Administered	Responsibility
Alumni Survey	Recent (typically within 5 years) graduates of the program	e-mail notification for SurveyMonkey	Department head
Employer Survey	Employers of recent graduates	e-mail notification for SurveyMonkey	Department head
Graduating Senior Survey	Graduating seniors	e-mail notification for SurveyMonkey	Department head
Major Field Test	Graduating seniors	Part of CSCI 481, monitored by a faculty member	CSCI 481 instructor
Custom Test	Graduating seniors	Part of CSCI 481, monitored by a faculty member	Assessment committee
Portfolio	Teams of students in capstone courses	Done in capstone courses (468 and 483)	Assessment committee

In addition to the formal tools listed in the tables, faculty potentially use the following information to help make assessment decisions:

- Faculty experience. By teaching courses and advising students, the faculty develop ideas for improvement.

- Online course evaluations. Students are given the opportunity to evaluate each course each semester. Summaries of these evaluations are discussed at least once per year at a faculty meeting.

- Town meetings. In Spring Semester 2009, there were four town meetings: one for seniors, one for juniors, one for sophomores, and one for first-year students. The town meeting was an open forum for students to talk about their experiences in the CS program and provide feedback.

- Feedback from other departments. The CS Department serves students from other majors, such as the Electrical and Computer Engineering Department. These departments sometimes provide us with feedback regarding how well our courses meet their students' needs.

- Recruiter comments. Recruiters often share the skills and abilities they are seeking and provide informal feedback on MSU students who their company hired.

- Informal student comments. Students often share suggestions about how the curriculum can be improved with individual faculty or staff members.

Evaluators

The following groups of people are instrumental in evaluating the information gathered by the assessment tools:

- The CS Assessment Committee: Denbigh Starkey (chair), Hunter Lloyd, Brendan Mumey.
- The CS department head: John Paxton.
- The CS Faculty: please see the department website for membership.
- The CS Advisory Board: please see the department website for membership.
- The COE assessment expert: Carolyn Plumb.

Evaluation Process

- Alumni Survey.
  - The COE assessment expert summarizes the results and gives them to the CS department head.
  - The results are discussed at the annual CS retreat in August. Curricular recommendations are made and enacted.
  - The recommendations are discussed at the annual CS advisory board meeting in February.
  - The changes are monitored to see whether they are effective.
- Employer Survey.
  - Same process as for the Alumni Survey.
- Graduating Senior Survey.

- o Same process as for the Alumni Survey except results are discussed with the CS advisory board every third year.
- Major Field Test.
  - o The instructor of CSCI 481, Computer Science Program Assessment, summarizes the results.
  - o The second, third and fourth steps for the Graduating Senior Survey are followed.
- Custom Test.
  - o The CS Assessment committee grades the test using a pre-designed rubric and summarizes the results.
  - o The second, third and fourth steps for the Graduating Senior Survey are followed.
- Portfolio
  - o Same process as for the Custom Test.