CSM

BS Program in Computer Science

Department of Computer Science

Student Outcomes Assessment Plan (SOAP)

I. Mission Statement

The mission of the Department of Computer Science is to provide undergraduate and graduate programs giving students a broad range of knowledge and experience in computer science, as well as critical thinking and technical skills that will be needed in the students' later careers, whether professional or academic; to support the university mission by offering valuable service and General Education courses that bring the ideas and methodology of computer science to non-majors and teaching service-learning courses to engage with local non-profits and businesses.

The general learning goals for students of the Department of Computer Science are knowledge, to understand the concept of computation in both its abstract form and its physical realizations; skills, to be able to implement computational models in software effectively; and values, to appreciate the roles and responsibilities of computer science professionals in the contemporary world.

II. Goals and Student Learning Outcomes

Graduates with a B.S. degree from the Department of Computer Science will be able to:

A. Demonstrate solid understanding of fundamental concepts and principles in each specific area of computer science and how they are applied in various scenarios and applications;
B. Demonstrate solid skill of problem solving by applying appropriate data organization, programming methods, algorithms, and communications;
C. Gather and analyze software requirements, apply appropriate design, implement software using one or more modern programming languages, and test the correctness of the software;
D. Work as a team to solve larger scale problems and use contemporary tools to speed up the development process;
E. Present technical findings effectively, write satisfactory reports, document their work, and communicate their ideas with both Computer Science professionals and general audience.

III. Curriculum Map (Matrix of Courses X Learning Outcomes)

Course/Objective Matrix for Undergraduate CSci Courses:

	A	B	C	D	E
40	I	I			
41	E	E	I		
60	I	I			
112	E	E			
113	E	E			
115	E	E			
117	E	E			
119	E	E			
144	R	R	I	I	
150	R	R	E	I	I
152	R	R	R	R	E
156	R	R	E	E	E
198	R	R	R		R

I=Introduced **E=Emphasis** **R=Reinforced**

IV. Assessment Methods

A. Direct Measures (at least three)

1. Major Field Test

   A sample of graduating students are required to take the Computer Science Major Field Test before graduation. This test is hosted and scored externally by ETS, and is a comprehensive undergraduate outcomes assessment for Computer Science that provides comprehensive national comparative data.

2. Student Programming Projects

   Designated Computer Science courses (e.g., 40, 41,60, 112, 113, 115, 117, 119, 144) will utilize rubrics to assess student projects produced in those courses. Such rubrics may describe, for example, the assessment of requirements, specifications, design, implementation, testing, tools/environments, life-cycle, team organization and communication, and the software project management plan of a software engineering project.

   See the pages following for an example rubric. Every two years, the department will request a designated faculty member (or members) to provide a report containing assessments and summaries of the selected projects, which will be then disseminated to rest of the faculty.

   Criteria: A score of 0-4 is given for each item in the rubric. It's considered acceptable that at least 70% of the evaluated projects receive an average score of 2.8.

3. Student Course Presentations

   Designated Computer Science courses (e.g., 144/156) will utilize rubrics to assess student presentations produced in those courses. Such rubrics may describe, for example, the assessment of structure of organization, effectiveness of delivery, and appropriateness of technical contents. Every two years, the department will request a designated faculty member (or members) to provide a report containing assessments and summaries of the selected projects, which will be then disseminated to rest of the faculty.

   Criteria: A score of 0-4 is given for each item in the rubric. It's considered acceptable that at least 70% of the evaluated projects receive an average score of 2.8.

4. Student Capstone Project Reports

   Student capstone project reports (e.g., CSCI 150/152/198) provide a strong indicator for the student learning outcomes listed in Section 2. Such reports describe the team arrangements, requirements, specifications, design, implementation, testing, tools, schedule, and budgets of a capstone project. Two capstone projects each year will be scored by three faculty members from the assessment committee for purposes of ensuring that the rubric is being applied reliably. All remaining projects will then be scored by one of these faculty members.

   Criteria: A score of 0-4 is given for each item in the rubric. It's considered acceptable that at least 70% of the evaluated projects receive an average score of 2.8.

B. Indirect Measures

1. Exit Interviews

   Every three years, Graduating students are invited individually or as a group for internal exit interviews with the department chair or program coordinator. Students are encouraged to provide comments and reflections about the program and its facilities.

2. Alumni Survey

   Every five years, the department will send out an alumni survey. The department will collect, summarize and analyze the returned survey. The results will be then disseminated to all faculty members.

3. Faculty Discussion of Student Strength and Weakness

   Every year, the department will schedule a faculty retreat and discuss student strength, weakness, and identify key areas for improvements.

4. Employer Survey

   Every five years, the department will send out an employer survey. The department will collect, summarize and analyze the returned survey. The results will be then disseminated to all faculty members.

V. Student Learning Outcomes X Assessment Methods Matrix

	A	B	C	D	E
A.1	3	2			
A.2	2	3	3	1	1
A.3	2	x	1	2	3
A.4	1	3	3	3	2
B.1	1	2	2	1	2
B.2	1	3	3	3	2
B.3	2	2	2	2	2
B.4	2	3	3	3	3

3=strong **2=moderate** **1=possible**

VI. Timeline for Implementation of Assessment Methods and Summary Evaluations

Year 2014 to 2015

Method A.4 ETS Major Field Test

Method B.1 Exit Interviews

Method B.3 Discussion of Student Strength and Weakness

Year 2015 to 2016

Method A. 2 Programming Projects

Method B.4 Client Survey

Method B.3 Discussion of Student Strength and Weakness

Year 2016 to 2017

Method A.1 Capstone Project Report

Method B.2 Alumni Survey

Method B.3 Discussion of Student Strength and Weakness

Year 2017 to 2018

Method A.2 Programming Projects

Method A. 3 Course Presentation

Method B.3 Discussion of Student Strength and Weakness

VII. Process for Closing the Loop

The Department of Computer Science has an curriculum and assessment committee consisting of all tenured and tenure track faculty monitoring the undergraduate program, suggesting curriculum and other catalog changes, and reviewing changes proposed by others. The Chair of this committee is also the Curriculum/Assessment Coordinator.

The members of the Undergraduate Committee are responsible for designing and carrying out assessment activities with the help of the entire faculty as needed. The Committee also analyzes the resulting data and suggests changes to the program as necessary. Assessment data and suggested program changes are presented to the entire faculty in the annual department assessment retreat, and the entire faculty decides whether to implement any changes.

APPENDIX (I)

Assessment Form for A.2

Student: _____ Assessor: _____

Exemplary	Accomplished	Developing	Beginning	Unacceptable	**Programming**
4	3	2	1	0	
Completion of Programming Task					
					Demonstrates synthesis of solutions and creates alternatives by combining knowledge and information.
					Demonstrates a clear understanding of how various pieces of the problem relate to each other and the whole
					Uses software tools and computing resources correctly and effectively.
Correctness					
					Program contains error checking code and handles all special cases.
					Program meets its functional specifications and expectation of advisor.
Documentation					
					Clear and effective use of comments to indicate why the code was written.
					Answers/Solutions are properly labeled/commented in great detail.
					Thorough and organized testing has been completed and output from test cases is included in documentation.
Presentation					
					Name, date, assignment specifications and description included.
					Excellent use of white space (indentation, blank lines).
Additional Comments:					

APPENDIX (II)

Assessment Form for A.3

Student: _____ Assessor: _____

Exemplary	Accomplished	Developing	Beginning	Unacceptable	**Oral Presentation**
4	3	2	1	0	
Organization					
					Introduction/motivation, approach, related work, and conclusion are included.
					Contents are logically and sequentially organized.
					References are introduced appropriately.
Delivery					
					Speaks clearly, distinctly, and with sufficient volume.
					Speaks to audience (e.g., does not just read the material and/or talk to the screen)
					Provides sufficient technical detail given the time constraint.
					Listens carefully and responds effectively to questions and comments. (e.g., good interaction with audience)
Technical Content					
					Describes goal, problem, or hypothesis.
					Demonstrates a good understanding of the problem area and related work.
					Applies methodologies/techniques appropriate for the presentation requirements.
					Explains and interprets results and/or questions correctly.
Additional Comments:					