Assessment of Student Learning Plan (ASLP): <u>Computer Science</u>

<u>2017-18 Academic Year</u>

University of Southern Maine

A. College, Department, Date

College   Science Technology & Health
Department Computer Science
Date   5/31/18

B. Contact Person for the Assessment Plan
Name and title   Dr. David Briggs, Dept. Chair

C. Degree Program
Name of Degree Program   Bachelor of Science in Computer Science

D. <u>Assessment of Student Learning: Program Assessment</u>

<u>*Step 1: Identify the Student Learning Outcomes*</u> *(SLO's)*

a. *Do you have your student learning outcomes published on your department's website?*   Yes

<u>http://usm.maine.edu/cos/mission-statement-department-computer-science</u>

b. *Please identify* **which of your student learning outcome(s) were assessed this past academic year**.

In Fall 2017, COS 450 was offered and its learning outcomes assessed. In Spring 2018 COS 350, COS 420, and COS 457 were offered and their learning outcomes assessed. The department will meet to discuss the outcomes of the assessments. Here is a list of the courses and their associated outcomes:

COS 350 - outcomes (a), (c), (h) and (k)

COS 420 - outcomes (c), (d), (i), and (k)

COS 450 - outcomes (b), (e), (f), and (i)

COS 457 - outcomes (b), (e), (f), and (i)

The outcomes are:

(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 practice.

(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.

c. *Do you have a **matrix or curriculum map** showing when your student learning outcomes are assessed and in which courses?* Yes

> Assessment map:
> Spring 2018 (even spring)
> COS 350 (a) (c) (k)
> COS 420 (c) (d) (i) (k)
> COS 457 (b) (e) (f) (i)
>
> Fall 2018 (even fall)
> COS 360 (b) (h) (j)
> COS 450 (b) (e) (f) (i)
>
> Spring 2019 (odd spring)
> COS 398 (e) (f) (g) (h)
> COS 485 (a) (j)

Step 2: Assessment Methods Selected and Implemented

a. *Identify which direct measures (other than course grades), that were used to determine whether students achieved the stated learning outcomes for the degree.*

Our assessments are direct measures using rubrics for specific assignments or exam questions designed to evaluate achievement of a specific learning outcome. The details of the specific assessment instruments and their rubrics are documented in the submission to the ABET visiting team.

b. *Briefly describe when you implemented the assessment activity, and if a scoring rubric was used to evaluate the expected level of student achievement. (This information may be shown on your curriculum map).*

The individual assessment instruments are, of course, implemented when the class is delivered, according to the matrix given above. All assessments use scoring rubrics and are normalized for the convenience of the ABET examiners to a scale of 1 to 5 for Poor, Fair, Good, Very Good, Excellent(or some comparable nomenclature). The courses which assessed outcomes during the 2017-2018 academic year are COS 450(fall), COS 350(spring), COS 420(spring), and COS 457(spring).

Step 3: Using the Assessment results to Improve Student Learning

a. *Briefly describe your unit's process of reviewing the program assessment results (i.e. annual process by faculty committee, etc).*

At the end of each year we have a department meeting where we share and discuss our assessment results and discuss plans for future changes. This meeting has been an important and useful opportunity for sharing ideas and experiences. Indvidual faculty members share their assessment results and identify specific problems and their intended responses.

b. *What changes have been or will be made to improve student learning, as a result of using the program assessment results?*

Our changes are generally about spending more course time on difficult topics or modifying the materials or learning activities. In the past we have changed COS 161 and COS 285 from 3 to 4 credit to add labs and more course time to cover material

better. These have both been valuable changes. More recently, some courses have shifted to more team based learning approaches.

Final conclusions from this year's assessments are <u>not</u> yet available as we have not met yet.

    c. Date of most recent program review/self-study?

ABET accreditation visit in spring semester of 2016.

E. Course Assessment Activities: *Is your program able to report any assessment-related activities at the Course-Level… (i.e. created grading rubrics to use in required courses, examined student progress in entry-level courses, developed a new course, etc)? Please briefly explain any assessment projects.*

We have long been concerned about the attrition we experience in our early courses, but we believe this is common in our discipline in that many students enter it without understanding the rigorous work and strong grasp of logic and mathematics that it requires.   We have a new hire with experience in teaching discrete mathematics and he has been working with an adjunct in the mathematics department to improve the discrete mathematics sequence. Some individuals are planning to incorporate features of the flipped classroom model in courses with are very concerned about the high number D, F, I & W grades in our introductory classes. We are reworking the discrete mathematics sequence to make it more applied and integrated with the students' programming work. We are curious to understand better what tools are critical for students to be successful in our curriculum and to deliver instruction in them early.

F. Community Engagement Activities in your departmental curriculum:

a. Does your department have a student learning outcome that is related to any community engagement activities?   If so, please state the outcome.

Although some of the learning outcomes, notably (e) and (g), refer to non-academic contexts, the assessments are <u>not</u> related to any community engagement activity.

b. Please indicate what community engagement activities are included in your program's curriculum, and whether the activities are required or optional for students in your major.

Community Engagement Activity	*Included*	*Required/Optional*	
Student Research (related to a community-based problem)	___	R	O
Student-Faculty Community Research Project	___	R	O

Internship, or a Field Experience	___	R	O
Independent Study (community-related project)	___	R	O
Capstone Course (community-related project)	___	R	O
Service-Learning (course-based)	___	R	O
Study Abroad, or an International Program	___	R	O
Interdisciplinary Collaborative Project (community related)	___	R	O
Student Leadership Activities (related to a team project)	___	R	O
Students/Faculty Community Leadership	___	R	O
(advisory boards, committees, conference presentations)			
Other Activities (not mentioned above):			

c. Please list any courses (i.e. EDU 400) that have a community engagement activity in your program.

Many of our students do "internships", which are more like fixed term part time employment that does not earn academic credit. We work with our advisory board to facilitate placement and believe the experiences are valuable, but they are not formally a part of the degree requirements. No courses in our program have community engagement activities. As an engaged learning component becomes part of the general education requirements of the Core Curriculum, we expect to adapt the internship experience so it can meet it and to determine other opportunities for our students to meet this requirement, whether by instructing or mentoring secondary school students, doing volunteer work for external organizations or some other modality.