REPORT ON AY2022-2023 ACADEMIC ASSESSMENT

Submission date: 11/15/2023

Assessment Plan covered in the report: Computer Science BA/BS

College: College of Engineering

Campuses where the program(s) is delivered: ☒Anchorage ☐KOD ☐KPC ☐MSC ☐PWSC

Submitted by: Frank Witmer, Associate Professor and Chair of CS&E, fwitmer@alaska.edu

After responding to the questions below, the program should email this form to the dean, with a copy to the appropriate community campus director(s) if the program is delivered on a community campus.

1. **Please list and number the Program Student Learning Outcomes your program assessed in AY23. For each outcome, indicate one of the following: Exceeded faculty expectations, Met faculty expectations, or Did not meet faculty expectations.**

   Example: 1. Communicate effectively in a variety of contexts and formats – Exceeded faculty expectations; 2. Adopt critical perspectives for understanding the forces of globalization and diversity – Met faculty expectations.

   The CS&E department assessed all six Program Student Learning Outcomes for AY2022-23. Faculty expectations are met when at least 75% of students are rated Satisfactory or Excellent; expectations are exceeded when at least 90% of students are rated Satisfactory or Excellent.

   Outcome 1: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

   85.4%: Met faculty expectations.

   Outcome 2 Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

   82.9%: Met faculty expectations.

   Outcome 3: Communicate effectively in a variety of professional contexts, including technical and non-technical audiences for business, end-user, client, and computing contexts.

   97.1%: Exceeded faculty expectations.

   Outcome 4: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

68.0%: Did not meet faculty expectations.

Outcome 5: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

87.0%: Met faculty expectations.

Outcome 6: Apply computer science theory and software development fundamentals to produce computing-based solutions.

81.7%: Met faculty expectations.

2. **Describe your assessment process in AY23 for these Program Student Learning Outcomes, including the collection of data, analysis of data, and faculty (and other, e.g., advisory board) conversations around the findings.** *(1000 words or less)*

Faculty teaching the below courses evaluate students based on established rubrics for each outcome. Students are evaluated as Poor, Developing, Satisfactory, or Excellent. Results are entered into a master spreadsheet for analysis and discussion by department faculty members.

Outcome 1: CSCE A401 (Software Engineering) and CSCE A470 (Capstone)

Outcome 2: CSCE A401 and CSCE A470

Outcome 3: CSCE A401 and CSCE A470

Outcome 4: CSCE A465 (Computer and Network Security)

Outcome 5: CSCE A401 and CSCE A470

Outcome 6: CSCE A351 (Automata and Algorithms)

3. **What are the findings and what do they tell the faculty about student learning in your program?** *(1000 words or less)*

For the five out of six student learning outcomes evaluated, students met or exceeded faculty expectations. Outcome 4 was the only outcome that did not meet faculty expectations. This could be due to a new instructor both teaching the course and conducting the evaluations. In the prior two assessments, students either met or exceeded faculty expectations. The department agreed to monitor this outcome before making an program changes.

A portion of the sixth outcome can be evaluated based on results from the national Educational Testing Service (ETS) Major Field Test in Computer Science. For AY2022-23, our students scored in the 72nd percentile for Programming Fundamentals, 35th percentile Computer Organization/Architecture/Operating Systems, and 78th percentile in Algorithms/Theory/Math. This is the second year that the Comp Org/Arch/OS subject area result has been below the 50th percentile mark. The score improved from last year, so we are hoping that trend will continue. The department thinks that the reduction in test scores for this subject area may reflect the COVID pandemic which forced in-person hardware labs to be moved online. Now that labs are back to in

person instruction, we expect this score to continue to improve. For the overall exam, our students ranked in the 71st percentile nationally, which we rate as Satisfactory.

4. **Based on the findings, did the faculty make any recommendations for changes to improve student achievement of the Program Student Learning Outcomes?** No

   i. **Please describe the recommended action(s), what improvements in student learning the program hopes to see, the proposed timeline, and how the program will know if the change(s) has worked. If no recommendations for changes were made, please explain that decision.** *(1000 words or less)*
   Given the strong performance of students meeting most of the Outcomes, we did not make any changes. Based on written comments that students made as part of our program exit survey, we discussed using git as part of one of the CSCE A211 labs and as part of CSCE A311. These minor course changes should improve programming skills, but we do not expect them to directly affect any of the Program Student Learning Outcomes.

5. **In the past academic year, how did your program use the results of previous assessment cycles to make changes intended to improve student achievement of the Program Student Learning Outcomes? Please check all that apply.**

   ☐ Course curriculum changes
   ☐ Course prerequisite changes
   ☐ Changes in teaching methods
   ☐ Changes in advising
   ☐ Degree requirement changes
   ☐ Degree course sequencing
   ☐ Course enrollment changes (e.g., course capacity, grading structure [pass/fail, A-F])
   ☐ Changes in program policies/procedures
   ☐ Changes to Program Student Learning Outcomes (PSLOs)
   ☐ College-wide initiatives (e.g., High-Impact Practices)
   ☐ Faculty, staff, student development
   ☐ Other
   ☒ No changes were implemented in AY23. *(If no options above were selected)*

   If you checked "Other" above, please describe. *(100 words or less)*

6. **Do you have any information about how well these or other past improvements are working? Are they achieving their intended goals? Please include any data or assessment results that help you demonstrate this.** *(1000 words or less)*

   For AY2020-21, we revised the introductory sequence to require a new class, CSCE A101

Introduction to Computer Science, as a prerequisite to CSCE A201. The goal was to reduce the high Drop/Fail/Withdraw (DFW) rates for CSCE A201 and improve student programming skills throughout the program. The following table shows DFW rates have improved (decreased) for CSCE A201 since implementing these changes in Fall 2020:

Term	DFW
SP17	48%
FA17	52%
SP18	44%
FA18	47%
SP19	45%
FA19	59%
SP20	51%
FA20	38%
SP21	27%
FA21	27%
SP22	36%
FA22	24%
SP23	33%

DEAN SECTION (Due to the program on January 15)

After completing the Dean Section and signing it, the dean should email this form to the program, and copy uaa_oaa@alaska.edu for posting. If the program is delivered on one or more community campus, the dean should consult with the appropriate community campus director(s) on the response and copy the appropriate community campus director(s) when emailing the response to the program.

1. **Based on the program's responses above, what guidance and support do you have for the program moving forward?** *(200 words or less)*

   We agree with the program faculty that, given that students are largely meeting faculty expectations on the SLOs, the minor changes proposed are appropriate. If student achievement of Outcome 4 continues to be low, more concerted changes may be necessary, but for now the faculty have good reason to wait and continue to monitor the situation. The program has hired faculty in recent years and is currently running another search. Bringing new faculty on board is an excellent opportunity

to examine teaching practices and explore new ways that faculty can collaborate across the curriculum to ensure students get a good foundation. The department should also study the retention rates for CSCE A101 in addition to CSCE A201.

2. **Discuss what the program is doing particularly well in terms of its processes for the assessment and improvement of student learning, for example, the use of a common rubric or prompt, a signature assignment, etc.** *(200 words or less)*

We agree that the data presented for CSCE A101 in terms of the CSCE A201 pass rates are encouraging. The department is also commended for following through with the process for better documentation of meetings that was implemented in response to feedback from ABET in the last academic year.

Dean's signature: _____   **Date:** 1/15/2024