Departmental BPC Plan
Computer Science
Colorado State University

Effective dates of Plan: 05/13/2024 - 05/13/2026
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1. Context

Colorado State University (CSU) is a land grant and Carnegie R1 (Very High Research Activity) university nestled in the foothills of the Rocky Mountains. CSU is known for its commitment to improving undergraduate graduation rates and its Student Success Initiative has brought graduation rates for nearly all undergraduate communities to well over 70% (from the national average of 65%).

The Computer Science department supports 1,187 undergraduate majors and 191 graduate students plus approximately 65 minors. The department was a BRAID Affiliate during 2019 – 2020 and currently is a partner with the Northeastern Center for Inclusive Computing (CIC). The department leadership strongly believes in having one major goal for broadening participation – increasing the fraction of Computer Science majors who are women (all ethnicities and abilities) from 11% in 2018, when we started and currently 21%, to between 35% and 50%. The department had previously determined that we lose women from our major at about a 60% higher rate than men after each of the lower division courses CS 164, CS 165, and CS 220. To put this in context, we lose about 7.5% of men after each of these courses and 13.5% of women. On the other hand, women who persist beyond the sophomore year courses, go on to graduate with a CS major. Thus, we plan to coordinate BPC activities not only to increase the number of incoming women students but also to reduce the drop-out rates in the lower division courses. The department has achieved some success (outlined below) with the activities from the most recent BPC plan (expiring on 5/16/2024) that shows that the department is on the right trajectory towards its goal. This momentum motivates the department’s next BPC plan, which is proposed as a continuation of the earlier BPC plan. The department commits to a yearly budget of approximately $50,000 for the activities described in this plan on achieving that goal.

1.1. Achievement Summary from most recent BPC Plan:

a) The department had updated introductory courses – CS150, CS163/4 and CS165. Preliminary data shows that this change has resulted in the department retaining women students at almost the same rate as men during the same point.

b) The department had conducted two summer camps during 2022 and 2023 for high school students in cyber security. The 2022 camp was targeted specifically towards high school girls and had 25 students. The 2023 camp was a mix with the percentage of girl students being 45%.

c) The department supported 5 students from under-represented groups to the Grace Hopper in 2023 and 1 student to the Tapia conference respectively.

d) The department had worked to build collaborative relationships and programs with the Biology Department and the Data Science program. 36.4% of students in the Data Science program are women.
2. Goals, Activities, and Measurement

**G1.** Increase the fraction of Computer Science majors who are women to between 35% and 50% by 2028, by improving retention rates, increasing the pipeline of women students to CS, and making the CS department more welcoming and supportive to women students.

**A1.** Modify sophomore year CS courses – CS220, CS 253, CS 270 – apply inclusive teaching recommendations from BRAID and CIC to these classes, as we did previously to other classes, to help address the gender difference in retention in these courses. The department has already initiated this effort and expects that by 2026 we will achieve at least the same level of participation as seen in CS 150, CS 163 and CS 165, which had resulted from the department’s BPC activities outlined in the last plan. The department continues to make substantial investments each year in this effort, including funding graduate students to measure and evaluate courses. Contact: Associate Chair.

**M1.** Success for A1 would be measured by the percentage of women students completing each of these courses and who are still in CS by the end of the 3rd Fall Semester, showing that women are not more likely to Drop / Withdraw / Fail (DWF), and by the persistence rate in these courses, that is, the decision of women students to take the next course. The goal for persistence is 95%, and the goal for DWF is 0%. The department has a strong preference for efforts where courses are currently taught in old and new formats by the same instructor to control for instructor effects (which can be pronounced).

**A2a.** We support student clubs, most notably ACM-W and Women in Cyber Security (WiCyS). Women faculty members from the department serve as faculty advisors in these clubs.

**A2b.** The department also organizes the weekly Latine Lunch involving students, teachers, and staff members to foster a sense of community among the Latine underrepresented group.

**A2c.** We continue to send teams of students to the annual Grace Hopper and Tapia conferences. We have observed that sending a faculty member with the team of students leads to deeper faculty understanding of diversity issues and more insightful participation in diversity efforts, and we continue to support faculty participation in these conferences.

These activities are coordinated by the department’s advising team. Contact: Associate Chair.

**M2.** Success for A2 is measured in women student retention and graduation rates. We have data showing that keeping the student/advisor ratio below 250/1 improves retention of women and so we track that ratio.

**A3.** Develop and promote joint majors between CS and other majors, like Design Sciences, that have a higher percentage of women students. The department seeks to create one joint program per year. The activity is led by the department’s advising team and undergraduate curriculum committee. Contact: Associate chair

**M3:** Success for A3 is measured in terms of students who are in joint majors and their retention and graduation rates disaggregated by gender.