Departmental BPC Plan
Department of Computer Science
University of Alabama

Effective dates of Plan: 07/16/2024 - 07/16/2026
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1. Context

The University of Alabama (UA) is a land-grant institution located in west-central Alabama in Tuscaloosa, Alabama. UA is one of four major public universities in the State of Alabama classified as a Carnegie R1 university. The Department of Computer Science (CS@UA) is housed in the College of Engineering (CoE) and serves approximately 1000 undergraduates and 60 graduate students. In the fall of 2023, 11.2% of the undergraduates at UA identified as Black, 9.7% of undergraduates in the CoE identified as Black, while in CS@UA, 15.1% of our undergraduates identified as Black.

UA, the CoE, and the CS department are all committed to broadening participation in computing across our degree and outreach programs. While CS@UA sponsors multiple activities that have been successful in recruiting Black high school students (e.g., NSF-sponsored LEGACY project), many of our Black students are not retained beyond their first year in CS. The overall DFW rate (a grade of D, F, or Withdraw) in our CS1 was at a high of 65% in 2018. To improve our student enrollment and retention, we made some changes to our CS1 course, resulting in a decrease in our DFW rate in CS1 to 46% in Fall 2020. *Unfortunately, the DFW rate for Black students remained at 65%.* As we continue to make changes, during the 2023-24 AY the DFW rate for non-Black students in CS1 decreased to 26.6%, and the DFW for Black students decreased to 36%. To broaden participation in computing at UA, this disparity in performance between our focus population of Black students and their peers will continue to be addressed.

2. Goals and Activities

G1: Throughout 2024-26, continue to collect, report, and annually discuss data with respect to our BPC plan to monitor progress, help identify issues and gain insight as to why we are not retaining our Black students.

A1a: Using the midterm and final grades at the end of each semester, compare the DFW rate for our focus population to that of their peers and share results with the faculty. (Yessick/Vrbsky/May)

A1b: Work with the Admissions Office to obtain and understand data about new and transfer applications to CS@UA disaggregated by race. (Gong)

E1: Track what data was collected and analyzed, and share with faculty.

A8: Utilize departmental surveys of current CS students to create a feedback mechanism to receive the students' opinions, concerns, and perspectives about the departmental BPC activities they believe to be critical to their development and future success. Survey students who have left CS to identify their reasons for leaving. (Vrbsky)

E8: New surveys and their results will be shared with the faculty.

A9: Participate in the CRA Data Buddies Survey, which will survey students and provide an annual report disaggregated by race. (Anderson)

E9: The report will be presented in departmental meetings to increase faculty awareness of the department progression in BPC.

G2: Within two years (2026), continue to decrease the difference between the DFW rate of our Black students and their peers.

A3: Continue to refactor our CS Freshman course experience and apply appropriate inclusive pedagogical structures (e.g., active learning strategies, project-based learning) to ensure courses are engaging to our focus population, including those who have not had prior deep exposure to CS. (Yessick/Watson)

E3: Track changes in curriculum and students' perceptions of those changes.

A5: Create intentional CS learning communities for CS1 students, which have been shown in other contexts to help Black students succeed at and feel welcome in their studies. Start these communities from tutoring sessions staffed by graduate students/undergrad helpers with an emphasis on student connections, e.g., working with each other on problems provided. (Yessick/Watson/May)

E5: Track initial student participation through observation initially, followed by self-reported levels of participation in these communities.

A6: Support students attending such conferences as ACM Richard Tapia, NSBE, and Grace Hopper. (Vrbsky)

E6: Track students and faculty who attend these conferences.

A7: To assist with retention and freshman success of CS students overall and Black students in particular, institute a near-peer student mentoring program where upper-class students helping orient freshmen on campus, sharing strategies for success in the first year and helping students identify campus resources for focus population (e.g., student organizations such as ACM, ACM-W, NSBE, SWE). (Watson)

E7: Track student participation in these mentoring opportunities.

G4: By 2026 we will increase the enrollment of Black students in our program to 18% by focusing more of our outreach efforts on rural Alabama where the majority of high school students are Black.

A10a: Continue as an NCWIT Aspirations for Women affiliate. Review NCWIT applicants and host Central Alabama NCWIT awardee dinner at UA. (Gray)

A10b: Engage in activities with high schools where the majority of students are Black, such as high school programming contests, CS camps, field trips, and K-12 teacher workshops. (Gray)

A10c: With the NCWIT Counselors for Computing Program, initiate conversations with high school counselors in schools where the majority of students are Black to advise students about available classes at their school. Note that Alabama requires every high school to offer an authentic CS course. (Gray)

E10: We will evaluate and track our outreach activities to measure the number of events and the number and demographic of students participating.

A11: Work with the Admissions Office to identify the difficulties faced by our newly enrolled students in the pathway to success in CS@UA, using data disaggregated by race. (Hong)

E11: Systematically track new enrollment and obtain student feedback to help evaluate the impact and iteratively refine our process for building a recruiting pipeline that improves retention.