

**Departmental BPC Plan
Computer Science and Engineering
University of South Florida (Tampa, FL)**



Effective dates of Plan: April 1, 2021- March 31, 2024

Contact: Sudeep Sarkar, Chair, (sarkar@usf.edu), Ken Christensen, Associate Chair of Undergraduate Affairs, (christen@cse.usf.edu), Ximing Ou, Associate Chair of Graduate Affairs, (xou@usf.edu), Jing Wang, Director of BPC, (jw@mail.usf.edu)

1. Context

The University of South Florida (USF) is a large multi-campus urban R1 university with over 50,000 students located in the vibrant and diverse Tampa Bay area, with campuses in Tampa, St. Petersburg and Sarasota-Manatee. In 2020, 21.8% of USF's students were Hispanic, 9.6% were African American, and 59.4% were women. Computer Science and Engineering (<http://www.cse.usf.edu/>) at University of South Florida has 40 full-time faculty members (tenure-track and instructors) of which eight are women, and offers BS, MS, and PhD degrees. In fall 2019 the student headcount was 2109 undergraduates, 138 masters, and 116 PhD. students. CSE has four undergraduate degree programs – Computer Science, Computer Engineering, Information Technology, and Cybersecurity. CSE is in the top 20% (rank 34) of Computer Science departments at US public universities, according to Academic Analytics (2018).

In AY 2019-20, USF CSE awarded 309 BS degrees; 7.7% to African American students, compared to 4.1% nationally (CRA Taulbee survey 2019) and 18% to Hispanic students, compared to 8.7% nationally (Taulbee 2019). However, although there has been a steady increase in undergraduate women over the past decade (the percentage of BS degrees awarded to women grew from 10% in 2013 to 16% in 2020), we are still below national average of 21% (Taulbee 2019). Among undergraduate degrees awarded to women in AY 2019-20, 22% were to African American students, 20% were to Hispanic students, 27% were to Asian students, and 11% were to white students. For our entry level courses, class grades from AY 2019-20 showed slight gender differences, and indicated that a significant percentage of students overall are performing poorly (students receiving C, D, W, and F grades were: CS1 = 33% women and 30% men, CS2 = 46% women and 43% men).

At the graduate level, USF CSE awarded 87 degrees in AY 2019-20; 36% were women, and 8% were students from racial or ethnic groups that are underrepresented in computing. 22% of graduate degrees were awarded to US citizens and residents in AY2019-20, compared to about 35% nationally (Taulbee 2019).

2. Goals

- G1. Increase the enrollment of first year women in undergraduate CSE majors from 20% to 30% by 2024.
- G2. Decrease the percentage of C, D, W, and F grades in the follow-on courses at entry level for all four programs.
- G3. By 2024, develop and pilot a strategic plan for increasing diversity in our graduate programs.
- G4. Collect, track, report, and regularly discuss data with respect to broadening participation to help identify issues and monitor progress.

3. Activities and Measurement

A1: [Undergraduate Recruitment (G1)]

- Organize events for admitted undergraduate women; recruit CSE ambassadors to host the events and reach out to students [new; Christensen, Morfin, Fontalvo].
- Establish contact with local community colleges to discuss how to increase enrollment of women (FUSE program) [new; Christensen, Fontalvo].

A2: [Pathways into Computing (G1, G3)]

- Update admission criteria to create pathways into computing for undergraduate students in other majors [new; Christensen, Morgan].
- Increase enrollment in the non-major computing course (CGS2060) [new; Anderson].
- Through our membership in the MSCS New Pathways Consortium, work to draw students from underrepresented groups from non-computing disciplines to our Masters in CS program [new; Ou].

A3: [Marketing to prospective undergraduate students (G1, G2)]

- Provide better information about the department by having academic advisors present at admission events, hosting Week of Welcome department events for incoming undergraduate students, and holding advising events [ongoing; Morgan, Hendrix, Fontalvo, Morfin].
- Create articles and videos spotlighting recent women graduates and alumni to help prospective students see themselves in our department [ongoing; lamnitchi].

A4: [Collaboration with student organizations and industry partners (G1, G2, G3)]

- Engage in, support, and track the ongoing activities of WiCSE (Women in Computer Science and Engineering) [ongoing; Wang, Morfin]
- Participate as a cohort of students, faculty, and staff in diversity-focused conferences such as Grace Hopper Celebration of Women in Computing; support student travel to such conferences; track participation annually; seek student feedback [ongoing; Wang, Owczarek].
- Through the Computing Partners Program, develop close working relationships between industry members and CSE students and faculty; obtain support for educational initiatives and activities of CSE students such as travel, academic conferences, and competitions [ongoing; Christensen].

A5: [Pedagogical efforts (G2)]

As a partner institution of the Center for Inclusive Computing:

- Redesign entry level courses to be welcoming regardless of prior CS exposure. Modify the courses using evidence-based approaches that have been shown to have positive impact for students underrepresented in computing. [new; Wang, Small, Beasley, Zheng, Anderson, Hendrix, Rosen, Ventura, Hidalgo, Gaspar, Pazos Revilla, Ciampaglia].
- Redesign the non-majors programming course to assist in recruiting efforts. [new; Anderson]

A6: [Faculty BPC education and participation in BPC activities (G2, G3, G4)]

- Train faculty in best practices in BPC [ongoing; Sarkar].
- Create and maintain a list of BPC activities for faculty. We will track the number of BPC activities participated in by faculty [ongoing; Sarkar, Wang].
- Accelerate current efforts to recruit students from underrepresented groups via research exposure and research experience for undergraduate (REU) programs [new; Yavuz, Rosen].

A7: [Data collection and analysis (G4)]

- Closely track enrollment, retention, and graduation data disaggregated by gender and race/ethnicity, for independent measurement of progress [ongoing; Beasley, King, Morfin, Pruitt].
- Track persistence in introductory courses to identify when and where we are losing or gaining students and to evaluate the impact of specific curricular and pedagogical innovations [new; King, Owczarek].
- Participate in Momentum's research study to gain in-depth understanding of what matters to student outcomes [new; Sarkar].
- Participate in the Computing Research Association (CRA) Data Buddies project, which measures factors such as the student's knowledge, confidence, interest, and sense of belonging in computing, as well as the student perceptions of the department [ongoing; Pruitt].