Plan for Broadening Participation in Computing
Stony Brook University - SUNY
Department of Computer Science

Effective dates of plan: January 2022 to December 2023
Revision of plan will begin: June 2023
Contact: Samir Das, Professor and Dept Chair, (samir@cs.stonybrook.edu), Aruna Balasubramanian, Associate Professor and Chair of Diversity Committee (arunab@cs.stonybrook.edu)

Context
Stony Brook University (SBU) is a public research university and is a member of AAU. The Department of Computer Science is part of the College of Engineering and Applied Sciences and offers BS, MS, and PhD degree programs in Computer Science (CS) and a BS program in Information Systems (IS). The CS program is the 4th most popular undergraduate major on campus in terms of total enrollment – ~1300 in 2020 (~1000 in-majors and ~300 pre-majors). Pre-majors are freshmen and sophomores that must achieve a certain GPA in a specific set of CS classes to advance to the major. CS also has an honors program. Demographic data specific to the undergraduate program is presented in Table 1.

Race/Ethnicity

	University	College	Department
White	28.6%	22.3%	17.5%
Asian	30.9%	43.8%	53.8%
Black, Indigenous, Latinx, or Multiracial	22.6%	12.4%	8.2%
Non-resident Alien	11.2%	13.2%	12.2%

Note: May not add up to 100% as not all students declare their race/ethnicity.

Gender

Female	50.3%	22.9%	17.7%
Male	49.7%	77.1%	82.3%

Table 1: Demographic data for the undergraduate student population based on Fall 2020 enrollment. The departmental data include both CS and IS programs and also include pre-majors.

The department recently completed a two-year program with NCWIT's Extension Services and developed a preliminary understanding of the local challenges in the recruitment and retention of women in the undergraduate programs. Currently, the department is working on improving the retention of women in the CS undergrad program, funded by the Center for Inclusive Computing (CIC) of Northeastern University. The department actively partners with the WISE (Women in Science and Engineering) Honors Program on campus. The WISE program offers courses, mentoring, and tutoring to undergraduate female students pursuing degrees in STEM and a set of STEM experiences for middle and high school female students. In terms of trends, the percentage of women undergrads in the department has increased slowly with the percentage roughly doubling (8.7% to 17.7%) in the past decade, but it remains below the national average.

Goals, Activities, and Evaluation
The department continues to build a nurturing environment to enable students to succeed regardless of their gender, ethnicity, and socio-economic background. Specific goals include the following:

G1 Recruitment. Increase the fraction of undergrad majors from underrepresented groups in CS and IS by 4 percentage points by 2025.

A11 Explore pathways for entry to the major using the CS0 courses. A major impediment of increasing the participation of underrepresented groups in the department is capping CS1 classes needed for entry to the major. For example, a large fraction (about 44%) of women – many from other majors or undeclared – take the CS0 courses (CSE101 and IAE101) but the fraction reduces drastically for CS1. This

effort will include improving summer offerings for CS1 classes needed for the major, and reconsider policies for entry to the major. (Lead: Das, McDonnell)
A12 Improve undergraduate visit days and similar outreach programs for admitted students. Organize additional visit days and outreach specifically for admitted students from underrepresented groups in collaboration with specific campus groups, such as WiCS, ColorStack and WISE. (Lead: A Balasubramanian, Jain)
A13 Expand outreach to local schools going beyond the usual feeder schools by organizing faculty or alumni visits and open houses. Encourage faculty to participate in summer visits of high school students in their labs. (Lead: Sekar, Mitra)
Evaluation. Year-to-year demographic data for various cohorts – applicant pool, visit days participation, CS0 and CS1 classes, overall in-majors and pre-majors; tracking data related to success of specific outreach efforts.

G2 Inclusive Teaching. By 2024, all faculty and teaching assistants will learn about inclusive teaching practices and a minimum of 80% of faculty will adopt inclusive practices in their teaching methods.
A21 Train TAs on the topic of diversity, equity and inclusion. Hold regular TA training workshops. Expand the current effort to include undergrad TAs. (Lead: A Balasubramanian)
A22 Review and expand TA recruitment methods. (Lead: C Ramakrishnan, McDonnell)
A23 Improve faculty exposure to inclusive teaching practices via panels and workshops provided by SBU's CELT (Center of Excellence in Learning and Teaching), or other sources. Develop a department-level understanding of best practices. (Lead: Fodor, Mitra)
A24 Introduce class climate related questions in course evaluations. (Lead: Das)
Evaluation. Tracking data related to the number of TAs trained, TA demographics, TA participation in workshops, faculty input on their involvement in annual reports, class climate and inclusivity related questions in the course evaluations.

G3 Improving Pedagogy in Intro CS Sequence. By 2023 revamp the content of the intro classes, CSE101 and CSE114, to make them more engaging.
A31 Make it more manageable for students to handle multiple languages (python is used in CSE101 and then Java in CS114), develop a relatable and engaging set of programming exercises, showcase broad applications and impact of computing. (Lead: Fodor, McDonnell, Mitra)
Evaluation. Identification, development and adoption of learning materials, end-of-term course evaluations and student surveys.

G4 Student Experience and Retention. Improve students' experience and build their confidence aiming for improved retention of students from underrepresented groups. By 2025, reduce attrition of underrepresented groups to be on par with the general student population in CS.
A41 Increase faculty involvement in undergraduate research through WISE honors (Women in Science and Engineering) research rotations. (Lead: Sekar, Jain)
A42 Improve faculty participation in WiCS and ColorStack events. (Lead: Fodor)
A43 Establish a peer mentoring program with faculty participation. Create graduate fellowships to encourage the participation of grad students in peer mentoring. (Lead: McDonnell)
A44 Create focus groups to understand issues specific to commuter students and find ways to better support them. Over 40% of the undergrads in the department are commuters and initial data show that the dropout rate of women commuters relative to non-commuters is statistically significant. (Lead: A Balasubramanian, Zadok)
A45 Develop multidimensional data analysis to understand why and where women drop out more significantly in the 8-course mandatory CS sequence. Women drop out of CS at a higher rate than men in the department. (Lead: Zadok, Mueller)
Evaluation. CRA's annual Data Buddies survey, department level survey/data collection, student participation in peer mentoring, data related to faculty participation via annual reports.