Departmental BPC Plan
Computer and Information Science
University of Pennsylvania

Effective dates of Plan: 06/27/2023- 06/27/2025
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1. Context

The University of Pennsylvania is a private, Ivy League research university located in Philadelphia, Pennsylvania. Undergraduate admission is highly selective, with 9% of applicants admitted in 2020. The table below presents some data on the demographics of the undergraduate population of the CIS Department in 2016 and in 2021, comparing the percentage of majors from populations that are underrepresented in computing such as women as well as those who identify as Hispanic, American Indian or Alaska Native, Black or African American, or Native Hawaiian or Pacific Islander. Data for the entire undergraduate population of the university, and from the Taulbee survey of US and Canadian computer science departments, are also presented as points of comparison.

	Undergraduate		Masters		Doctoral	
Population	**Women % 2016 | 2021**	**URM % 2016 | 2021**	**Women % 2016 | 2021**	**URM % 2016 | 2021**	**Women % 2016 | 2021**	**URM % 2016 | 2021**
Penn	50 | 54	18 | 18	53* | 59*	- | -	*See Masters*	
Penn CIS	15 | 28	6 | 9	40 | 47	6 | 2	19 | 24	0 | 0
Taulbee	18 | 22	11 | 13	25 | 28	2 | 4	17 | 23	2 | 3

The CIS Department's undergraduate population is above the Taulbee average of other CS departments in terms of gender diversity, though it lags far behind Penn as a whole. In racial diversity, the department unfortunately trails both the Taulbee average and the rest of the university, though these gaps have narrowed since 2016 even as the department has undergone substantial growth in undergraduate enrollment.

For Masters students, CIS is well above Taulbee averages for enrolled women, but lagging (with a growing gap) in terms of racial diversity. Our PhD program is in line with Taulbee averages in terms of women enrolled. With an average cohort of just 16 students per year, most years see no students from underrepresented racial groups enroll. However, across 2016-2021, 3.1% of students in the CIS PhD program have been from underrepresented racial groups, again in line with the Taulbee averages. (Penn only reports gender breakdown for graduate programs as a whole, without data on racial/ethnic categories or of doctoral versus Masters students. See aggregate graduate student percentages (with a *) in the Masters columns.)

2. Goals, Activities, and Measurements

G1. Increase gender and racial diversity of undergraduate students, demonstrating year-on-year improvements. Because CIS already exceeds national averages reported by Taulbee, we will seek to close the diversity gap between the department and the overall university.

A1(a) Support Conference Participation. The faculty will attend and also encourage student participation in conferences such as Grace Hopper Celebration of Women in Computing, Richard Tapia Celebration of Diversity in Computing, Capitol WIC. Faculty will publicize these conferences as well as provide financial resources, excused leave from courses, accommodations for assignment deadlines. Faculty will travel to these conferences with undergraduate students (G1) and also use these conferences to seek graduate student applicants (G2) and faculty candidates (G3). (A. Bhusnurmath, S. Sheth).

A1(b) Host Diversity Summits. The department will organize regular diversity summits to discuss representation and solicit feedback. Faculty will encourage participation, synthesize discussion points,

collect appropriate data, and propose specific actions in response. For example, recent summits have led to greater transparency in the hiring of teaching assistants (Z. Ives, Department Chair).

A1(c) Engage Undergraduate Researchers. Faculty will engage undergraduate researchers from populations that are underrepresented in computing through the Center for Undergraduate Research and Fellowships, the National Science Foundation's Research Experience for Undergraduates, and summer visiting positions (E. Vernon-Gray, B. Lee)

M1. Evaluate representation in the major. Evaluate number and demographics of undergraduate researchers hosted with emphasis on success in the major as well as applications and matriculations to graduate school. Evaluate number of faculty hosting undergraduate researchers.

G2. Increase gender and racial diversity of graduate students, demonstrating year-on-year improvements toward matching and then exceeding national averages.

A2(a) Recruit Doctoral Students. Faculty will leverage university and school fellowships, such as the Fontaine Fellowship, to recruit PhD students from under-represented groups. Moreover, faculty will encourage and mentor these students as they apply to external fellowships such as the National Science Foundation Graduate Research Fellowship (V. Liu, Admissions Chair).

A2(b) Host Mentoring Workshops. Faculty will organize mentoring workshops for sub-disciplines within computer science such as the Programming Languages Mentoring Workshop, Women in Theory, and Young Architect Workshop. These workshops will be designed to foster inclusion and belonging, especially for students from populations that are under-represented in computing (S. Angel, J. Devietti, T. Rabin, S. Weirich).

M2. Evaluate the number of workshops offered and student attendance. Evaluate number and demographics of graduate students in the department with emphasis on entry, retention, fellowships, and time-to-completion for doctoral exams.

G3. Increase gender and racial diversity of faculty, demonstrating year-on-year improvements toward matching and then exceeding national averages.

A3(a) Faculty Recruitment. Faculty will work with programs that promote diversity among faculty and researchers such as the EECS Rising Stars program, National Science Foundation's LEAP Alliance, and the National Science Foundation's Computing Innovation Fellowship. Faculty will connect graduate students to opportunities within these programs, holding meetings and workshops to help students develop competitive applications to these programs. Faculty will actively recruit job candidates from these programs with a view towards increasing gender and racial diversity in recruiting short lists, on-site interviews, and offers (T. Rabin, Search Committee Chair).

A3(b) Seminar Speakers. Faculty will invite speakers from populations that are underrepresented in computing (Z. Ives, Department Chair).

M3. Evaluate demographics of faculty applications, short-lists, interviews, and offers. Establish baselines for assessing year-over-year improvement. Evaluate demographics of seminar speakers.

G4. Increase gender and racial diversity of K-12 students in Philadelphia area computer science programs, demonstrating year-on-year improvements. The city exhibits greater racial diversity than the university and the department. 44% and 16% of the population identify as Black/African-American and Hispanic/Latino, respectively.

A4(a) Fife-Penn CS Academy: Faculty will mentor Penn student groups that provide free K-8 coding clubs in Philadelphia area schools. (C.J. Taylor)

A4(b) Tech It Out Philly. Faculty will mentor Penn student groups that provide 9-12 coding workshops in Philadelphia area schools. (A. Haeberlen).

A4(c) Advanced Placement Courses. Faculty will mentor local high school students in after-school and summer courses that prepare students for the AP Computer Science A. (E. Fouh).

M4. Faculty will evaluate demographics and outcomes for each program.