Departmental BPC Plan
Computer Science
College of Liberal Arts and Sciences, Iowa State University (ISU)

Effective dates of Plan: 02/16/2022- 02/16/2024
Contact: Wallapak Tavanapong (tavanapo@iastate.edu), Professor of Computer Science

Context: The Department of Computer Science (ComS@ISU) offers B.S., M.S., and Ph.D. degrees in Computer Science, M.S. in Artificial Intelligence, and a B.S. in Software Engineering (jointly administered with the department of Electrical and Computer Engineering). We are one of the founding departments for the Data Science (DS) Minor and Certificate along with the B.S. and Ph.D. degrees in Bioinformatics and Computational Biology. The demographics for ComS@ISU in Fall 2020 are listed in Table 1.
Table 1. ComS and DS student and instructor (faculty and lecturer) demographics

Category	ComS Ugrads	ComS Grads	DS Ugrads	Faculty	ISU (Ugrad, Grad)
Total (#)	665	165	49	37	26,846, 4,352
Women (%)	12.5%	28.5%	24.5%	24%	43.5%, 45.1%
URE* (%)	11%	2.4%	10.2%	0%	9.3%, 8.1%

*Members of ethnic or racial groups (UREs) that are underrepresented in computing, including American Indian or Alaskan Native, Black, Native Hawaiian or Pacific Islander, and Hispanic/Latinx. The university does not disclose information about disability for the statistics.

Using the data summarized in Table 1, we identified under-representation of _women_ at all levels and under-representation of (aggregated) members of _UREs_ at _multiple levels_ in our program relative to ISU, suggesting problems with _recruitment_. We lack data on _retainment_ and on _engagement_ for BPC-related activities, thus many of our goals focus on increasing our understanding of our context and developing appropriate plans.

G1: Data Collection: By May 2023, implement a plan for annually collecting, processing, and analyzing department demographic data and then sharing the data and analyses with the department chair.
A1a: Faculty work with administrative staff to collect, process, and analyze course enrollments, major/minor matriculation numbers, and undergraduate research participation (Henry).
A1b: Faculty coordinate/develop, promote, and/or analyze results from climate surveys, such as the Data Buddies Survey and NCWIT Student Experience of the Major (Quinn).
A1c: Faculty collect and analyze publicly available data on disaggregated participation-in-computing rates at Iowa high schools, Iowa universities, peer institutions in the Midwest, and in computer science programs nationally (Tavanapong).
A1d: Faculty identify additional BPC data sources that can be collected annually (Tavanapong).
E1: Track faculty involved and the thoroughness of the report.

G2: BPC Education: Each year, at least 75% of faculty will learn about BPC data and activities.
A2a: Faculty participate in meetings where department BPC data/activities are discussed (Quinn).
A2b: Faculty participate in university workshops on diversity and inclusion such as ISCORE and NSCORE (Tavanapong).
A2c: Faculty complete the NCWIT 101: Introduction to Diversifying Undergraduate Computing Programs course (Quinn).
A2d: Faculty attend diversity related workshops/panels at research conferences and/or BPC related conferences, such as the annual SIGCSE Technical Symposium (Tavanapong).
E2: Track the number of department members participating.

G3: <u>Undergraduate Research</u>: By May 2023, track, and develop a plan for, increasing participation of women and members of UREs in undergraduate research and in graduate studies.

A3a: Faculty work with women and members of UREs using institutional and community resources, such as the First-Year Honors Program, RISE-UP, LAS Dean's High Impact Research Awards, or colleges in the region with higher proportions of underserved populations (Tavanapong/Lathrop).

A3b: Faculty improve awareness of undergraduate research, such as through revising the department website, giving talks in ComS 192X, meeting with affinity groups, or bringing in women and members from UREs as speakers to discuss research (Tavanapong).

A3c: Faculty encourage, prepare, and, if possible, sponsor undergraduate women and members of UREs to attend research conferences even if the student is not presenting (Tavanapong).

E3: Track faculty participation and number and demographics of participants, co-authorships, research awardees, and participants who later apply for graduate school.

G4: <u>Student Recruitment</u>: By May 2023, create a plan for increasing undergraduate and graduate matriculation rates, as well as non-major course enrollments, for women and members of UREs.

A4a: Faculty and staff improve department materials (website, posters, email communications, etc.) used for publicity and recruitment to better encourage women and members of UREs to apply (Ott).

A4b: Faculty give talks to ComS 101, DS 101, first-year learning communities, or affinity groups to promote and maintain enrollment of women and members of UREs in ComS courses (Henry).

A4c: Faculty participate in events explicitly encouraging broader participation such as Iowa State University's Admitted Student Day or an Experience Iowa State (Henry).

A4d: Faculty give talks to high school computer science classes, encouraging women and members of UREs to apply to the BS programs (Tavanapong).

A4e: Faculty and staff recruit graduate students (through email solicitations, talks, REUs) from colleges and universities in the region with high student populations of women and members of UREs (Lathrop).

E4: Track faculty and staff involved, number and demographics of participants, number of initiatives and events.

G5: <u>Grade 8-12 Outreach</u>: By May 2023, create and implement a plan for increasing both the number of participants and the number of faculty planning and organizing BPC-focused outreach events.

A5a: Faculty develop and run modules for women and members of UREs in Grades 8-12 via existing university programs such as ISU Science Bound and ISU Extension 4-H (Tavanapong/Jia/Ott).

A5b: Faculty conduct sessions for the ISU Program for Women in Science and Engineering's annual events such as Go Further (Tavanapong).

A5c: Faculty and staff identify and develop relationships with additional potential partners such as Science Bound, Iowa 4-H, CSTA Iowa, Code.org provider in Iowa, Project Lead the Way for Iowa, or high school computer science teachers in the region to develop curriculum and or seek funding (NSF's CsforAll) to increase participation of women and members of UREs in Iowa high school computer science classes (Tavanapong/Cai/Kabala).

E5: Track faculty, staff and students involved, and number and demographics of participants.

G6: <u>Curriculum and Pedagogy</u>: By May 2023, implement a biannual review of the ComS curriculum and pedagogies in ComS classes.

A6a: Faculty incorporate pedagogical best practices for diversity and inclusion in their courses (Chaudhuri).

A6b: Faculty assist the undergraduate curriculum committee in examining potential barriers in the introductory course sequence due to disproportionate prior access to formal CS training (Chaudhuri).

A6c: Faculty help develop and, if approved, promote the ComS B.A. degree to broaden participation (Chaudhuri).

E6: Track faculty involvement, number of courses modified, and course outcomes.