

CS@Mines Departmental BPC Plan

Effective dates of Departmental BPC Plan: 2019-2024

Revision of plan will begin: January 2021

Contact: Tracy Camp <tcamp@mines.edu>, Department Head and Professor of CS@Mines

CS@Mines Context

Colorado School of Mines (Mines) is a public research university focused on science and engineering (ranked #32 by U.S. News). The Wall Street Journal ranked Mines #2 for combining scholarly research and classroom instruction, which nicely summarizes the mission of Mines. Mines demographics are (Fall 2019):

- 5,102 undergraduate students (31.1% women; ~17% URG¹)
- 1,420 graduate (M.S. and Ph.D.) students (29.6% women; ~10% URG)

We note that ~88% of the URG students at Mines are Hispanic/Latinx, which is similar to Colorado K-12.

The Department of Computer Science (CS@Mines) was founded in July 2016 (when CS separated from Electrical Engineering). CS@Mines is now the 3rd largest department on campus (and continues to be the fastest growing). CS@Mines undergraduate students can choose from six different tracks (CS+X tracks). CS@Mines demographics are (Fall 2019):

- 679 undergraduate students (21.8% women; 21.5% URG)
- 115 graduate (M.S. and Ph.D.) students (23.5% women; 11.3% URG)
- 13 Tenured/Tenure-track faculty (15.3% women; 0% URG)
- 4.5 Teaching Faculty, including Professor of Practice (33.3% women; 0% URG)

Recent analysis of retention data indicated no issues currently exist (i.e., CS@Mines retains women/URG students at similar rates). A recent student survey also showed no culture concerns by any one group. The Fall 2019 CRA Data Buddies survey indicates the only concern is mentoring women to graduate school.

CS@Mines recently received national recognition from the National Center of Women and IT (NCWIT) due to our success in transforming the demographics of our growing undergraduate program:

Undergrads	Fall 2008	Fall 2019	Change
# Majors	157	679	~4.3x
Women	17 (10.8%)	148 (21.8%)	~9x
URG	12 (7.6%)	146 (21.5%)	~12x

Limited focus on recruitment/retention at the graduate level has occurred; thus, significant opportunities exist.

M.S.	Fall 2013	Fall 2019	Change	Ph.D.	Fall 2013	Fall 2019	Change
# Students	14	80	~5.7x	# Students	5	35	~7.0x
Women	3 (21.4%)	16 (20.0%)	~5.3x	Women	2 (40.0%)	11 (31.4%)	~5.5x
URG	2 (14.3%)	13 (16.3%)	~6.5x	URG	0 (0%)	0 (0%)	0x

While CS@Mines has considered diversity more broadly than just women and URG (e.g., we have a scholarship grant for low-income students and the Department Head is involved with 1st gen students), we have not considered all possible dimensions (e.g., LGBTQ, people with disabilities, veterans). We have also not put focus on intersectionality, which is needed to fully understand the complexities that exist.

¹ URG = students from under-represented groups in computing: Hispanic/Latinx, African American, American Indian, Native Alaskan, Native Hawaiian/Other Pacific Islanders, and persons with disabilities.

CS@Mines Departmental BPC Plan

CS@Mines Goals

1. Increase participation of undergraduate women from 21.8% to 25% by 2024 (Mines 150th anniversary) and 30% by 2030 (to achieve gender parity with Mines).
2. Develop/Launch programs to increase the participation of graduate women from 23.5% to 25% by 2024 (Mines 150th anniversary) and 30% by 2030 (to achieve gender parity with Mines).
3. Increase participation of undergraduate students from URGs from 21.5% to 25% by 2024 (Mines 150th anniversary) and 30% by 2030.
4. Ensure retention data continues to be equivalent for all demographic student groups.

CS@Mines Activities and Evaluation (faculty member in charge in bold)

- **DECtech** [Goals 1, 4] – <https://tech.mines.edu>: DECtech (Discover, Explore, and Create Technology) is a K-12 outreach program launched in 2012 to recruit females to STEM. This STEM program is run by CS@Mines, so CS is often highlighted, and many CS@Mines female students are involved (helps to retain these women). **Camp**
- **U-CLIMB** [Goals 1, 4] – <http://cs-courses.mines.edu/csci101/U-CLIMB/>: U-CLIMB (Undergraduate Computing Leaders Invested in Mentoring Beginners) is a near-peer mentoring program that trains a diverse team to mentor students currently enrolled in our CS0 course (a course taken by students across campus). **Camp**
- **CS@Mines on Tour** [Goals 1, 3, 4] – <https://csontour.mines.edu>: CS@Mines students travel to K-14 schools with an interactive presentation about CS that encourages interest from diverse students. Students involved in On Tour create a supportive community that helps with retention goals. **Dantam (CC)/Zhang (HS)**
- **RMCWiC** [Goal 4] – <http://www.rmciwic.org>: The Rocky Mountain Celebration of Women in Computing (RMCWiC), which is led by CS@Mines/CU Boulder, occurs every other Fall semester. All CS@Mines female students are strongly encouraged to attend. **Camp**
- **PATHS** [Goals 3, 4] – <https://paths.mines.edu>: CS@Mines received an NSF S-STEM grant in 2016 to launch PATHS (Path Ambassadors to High Success), a scholarship program for academically talented, low-income students from Colorado to study computer science at Mines. **Camp/Williams**
- **Improve student mentoring** [Goal 2] – CS@Mines has required advising meetings (called Interrupt) each semester for our majors. CRA Data Buddies survey results show we need to improve our mentoring of women to graduate school. We plan to develop a new program to improve mentoring in CS@Mines. **Belviranli**
- **Graduate student recruitment program** [Goal 2] – CS@Mines has a graduate recruitment program; the department has started working on new practices/programs to encourage female/URG students to apply. **Hoff**
- **Other activities**: CS@Mines is involved in a number of other BPC activities as well, e.g., diversity and inclusion training for faculty and K-12 teachers, 1st gen/transfer/veteran community building, participation at Tapia, Zoom calls for accepted women, and evaluation of courses for inclusive instruction.

CS@Mines closely tracks several data to (1) assess the impact of our activities and (2) launch new activities when problems are discovered. Each year we consider the number of applications, acceptances, and enrollments in CS, all broken down by women and racial/ethnic groups. We also investigate retention/attrition, again broken down by women and racial/ethnic groups. **Yang** (CS@Mines Data Chair) tracks this data annually. We need to further improve our understanding of student outcomes from our recruitment programs (CS@Mines On Tour, DECtech, and U-CLIMB). **Camp** will begin a data collection effort to improve our understanding in 2020.

We periodically deploy pieces of the **NCWIT's Student Experience of the Major** to watch for retention issues (e.g., we deployed the Classroom Climate portion of this survey in 2017-18 and found no difference between women's and men's experiences in CS@Mines). In addition, each year we participate in the Computing Research Association (CRA) **Data Buddies** project, which provides a customized report on how our students responded to a survey compared to students at structurally similar institutions. We are working to improve mentoring of women in the department to address recent issues discovered from this survey. The CS@Mines Diversity Committee (**Camp, Painter-Wakefield, Dantam**) is in charge of deploying these surveys.