Departmental BPC Plan
Computer Science
Michigan Technological University

Effective dates of Plan: 03/31/2022- 03/31/2024

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1. Context

Michigan Technological University (MTU) enrolls 7200 students, primarily in scientific and engineering degree programs. It is located in the rural Upper Peninsula of Michigan, in the twin towns of Houghton and Hancock with a population of 12,000. The nearest metropolitan areas are more than 300 miles away. With many degree programs in traditionally male-dominated fields, MTU does not have gender parity. Indeed, in 2019 the University had an incoming first-year class over 30% females for the first time ever. The University also has little racial and ethnic diversity, with only 7.6% of the students identifying as African American, American Indian, Hispanic, Pacific Islander or Multiracial. Since our local region, the Western Upper Peninsula of Michigan, is 92% white, we need to extend our reach to attract non-white students. Southeast Michigan, including Detroit, is an excellent candidate, with a population that is 22% African American and another 9% from other groups historically underrepresented in computing. The 3600-member Keweenaw Bay Indian Community, which has partnered with MTU on many activities, is located about 40 miles from campus and is another potential community from which to recruit students.

The formation of the College of Computing in 2019 gave us an opportunity to emphasize our commitment to student diversity and to highlight the many paths toward computing careers afforded by our degree programs. Both University and Department goals underlie our BPC mission. The University Strategic Plan indicates that we will "[e]xpand programs in response to social and economic needs and challenges." The University's Portrait 2045 includes a vision of a student body with 40% women. In addition to these University objectives, underlying our BPC plan is the Department's overarching mission to serve our community and our State.

2. Goals

G1: Increase the percentage of women who graduate from our degree programs from 17% to 20% by 2025 and to match the overall graduation percentage at MTU by 2030 (anticipated to be about 30%).

G2: Increase the percentage of African American students in our undergraduate programs from 1% to 3% by 2025, the percentage of Hispanic students from 3% to 5% by 2025, and American Indian students from just above 0% to .5% by 2025. The longer term goal is to match the state demographics by 2030.

G3: Encourage more faculty involvement in BPC activities such that at least 50% of the faculty are involved in at least one BPC activity annually.

3. Activities and Measurement

A1: ***Plan collaborations with schools in southeastern Michigan and the Keweenaw Bay Indian Community*** **(G1- G3).** Work with other MTU units, as well as contacts at target schools, and the Keweenaw Bay Indian Community. Possible collaborations include classroom visits by CS undergraduate teams, student visits to MTU during the school year, and interactions with MTU CS alumni to discuss career options. *Metrics:* # of interactions; # of student participants and self-reported demographics; participant surveys on impact of intervention. (Chair - Ott and Diversity Committee - Bettin)

A2: ***Summer programs for high school students*** **(G1- G2).** Solicit for additional funding to allow more students to attend our existing Women in CS summer program. Find additional avenues to advertise our programs in order to increase attendees from American Indian, African American and Hispanic populations. *Metrics:* # of attendees and self-reported demographics; # who apply to MTU; # who attend MTU; participant surveys on the program impact. (*CS* Diversity Committee - Bettin)

A3: ***In-school and after-school programs for local middle and high school students*** **(G1-G2).** The CCCoders student organization provides yearlong courses in computing to 7-12 graders. Members also visit local schools during Hour of Code. Encourage additional women students to participate as mentors and serve as role models to the increasing numbers of young women in the program. Explore ways to involve students from the Keweenaw Bay Indian Community either in person or online. Continue AspireIT Workshops for middle school girls. *Metrics:* # of events held; # of student participants and self-reported demographics; participant surveys on program impact. (CCCoders Advisor - Ureel)

A4: ***Student participation in regional and national programs and conferences*** **(G1).** Continue to sponsor the Michigan NCWIT Aspirations in Computing Awards for high school girls, the Grace Hopper Celebration and the Michigan Celebration of Women in Computing and support student attendance. *Metrics:* # of Aspirations awardees who enroll in a computing degree and self-reported demographics; retention rate of conference attendees and Aspirations awardees. (CS Diversity Committee - Bettin)

A5: ***Evaluate and revise curriculum in line with BPC goals*** **(G1-G2*).*** Continue to monitor the realignment of CS introductory courses. In addition, search for other problematic points in the curriculum, identifying and mitigating underlying issues. *Metrics:* Drop/Fail/Withdraw rate disaggregated by race and gender for individual courses; retention rate. (Chair – Ott and Undergraduate Committee - N. Onder)

A6: ***Encourage student participation in research*** (**G1-G2).** Continue to pursue funding for Google Explore CSR workshops for regional undergraduate students to expose them to research. *Metrics:* # of attendees who enroll in CS grad programs and self-reported demographics. (Graduate Director - Mayo)

A7: ***Build a pipeline for MTU undergraduate women into CS research*** **(G1).** Encourage faculty with NSF grants to pursue REU funding and support high-performing, undergraduate women. Raise visibility of student and faculty REU participants. Develop a seminar to introduce undergraduates to research and engage them with faculty in small projects. Faculty will encourage promising MS students to apply to the PhD program. *Metrics:*# of faculty offering REUs, # of REU participants and self-reported demographics; # who ultimately enter grad school; # of MS students who continue in the PhD program. *(*CC Assoc. Dean for Research - KC)

A8: ***Scholarship programs to encourage students to remain in the major*** **(G1-G2).** The Department established the Persistence in Computer Science Scholarship Fund to help undergraduate students continue the pursuit of their CS degrees. *Metrics:* # of scholarship recipients; retention of recipients vs non-recipients. *(*Chair – Ott and Advancement Liaison - Desrochers)

A9: ***Include BPC activities as a factor in faculty evaluations for tenure, promotion, and salary adjustments (*****G1- G3)**. Metrics: % faculty involved in BPC. *(*Chair – Ott, CS TPR Committee - Kuhl)

Overall Metrics:

1. Number and Percentage change over time of:
    a. Women enrolled in undergraduate and graduate programs (G1)
    b. African American, American Indian and Hispanic students in BS, MS, and PhD programs (G2)
    c. Faculty involved in BPC-related activities each year (G3)