Departmental BPC Plan
Department of Computer Science & Engineering
Mississippi State University

Effective dates of Plan: 03/07/2023- 03/07/2025

Contact: Chair CSE BPC Committee (currently Dr. Ioana Banicescu, ioana@cse.msstate.edu)

1. Context

Mississippi State University (MSU) is one of the two land grant universities in the state of Mississippi (MS) and thus serves the whole state by offering a full spectrum of educational opportunities. The Department of Computer Science & Engineering (CSE) offers undergraduate degrees in Computer Science (CS), Software Engineering (SE), and Cyber Security (CYSO); the department was among the first in the USA to offer a degree in SE. The department offers also graduate degrees in CS & CYSO. Moreover, the CSE department participates in the following programs: Data Science BS/MS, Computer Engineering BS, Computational Engineering MS/PhD, and Computational Biology MS/PhD degrees. Our department is one of the few in the country to have a Center in Academic Excellence in Cyber Defense Research, Cyber Defense Education, and Cyber Operations concurrently.

As a state land grant university, the demographic categories in CSE are expected to reflect those of the state, especially at the undergraduate level. The state of Mississippi keeps track of the participation in the CS Advance Placement (AP) exams for K12 students; if these results are used as a proxy for interest in computing, CSE's undergraduate & MS degree production is lower than desired with respect to historically underrepresented groups (HUGs), women and African Americans in this instance (Table 1). We have been successful in our PhD program with respect to African Americans, exceeding the national average, but the numbers are still low. All the values lag the distribution of students from HUGs in the state K12 system. The objective of this BPC Departmental plan is to enumerate actionable goals in recruitment, retention, and faculty training through which CSE will seek parity with the expressed state-level interest in computing by students from HUGs.

Table 1: MS High School & AP exam demographics; CSE & National CS degree production

	K12	CS AP	CSE BS	CSE MS	CSE PhD	US BS	US MS	US PhD
Men	51%	62%	81%	83%	71%	81%	73%	80%
Women	49%	38%	19%	17%	29%	19%	27%	20%
White	43%	60%	66%	39%	14%	49%	23%	23%
African American	47%	19%	9%	0%	14%	6%	7%	2%

2. Goals, Activities, and Measurement

G1: In order to increase enrollment amongst students from HUGs by 2024, we will create programs to facilitate the engagement of students from HUGs with the CSE department and its activities.
A1a: Faculty will work with Admissions to have current students from HUGs engage with applicants from HUGs to encourage enrollment. *[Contact: Undergraduate Coordinator]*

A1b: Working with College and University programs, faculty will participate in summer camps and other recruitment activities that target students from HUGs. *[Contact: CSE Department Head/BPC Chair]*
M1a: The number of student contacts and the number of enrollments in different demographic categories will be recorded.
M1b: The amount of faculty participation in recruitment activities will be recorded.

G2: In order to improve retention in our undergraduate program, by 2024, we will have evaluated the current culture of the department and the introduction of best practices for retention in our curriculum.
A2a: Students will participate in the CRA Data Buddies survey or other satisfaction measurement instrument. Faculty will oversee the administration of said survey and review the results. *[Contact: BPC Chair]*
A2b: Faculty will analyze data from the previous 5 years to identify if there are persistence gaps between different demographic groups in the program. That will include: (i) rates for CS1, CS2, and CS3 earning a D, F, or withdrawing from the course; and (ii) attrition rates after CS1, CS2, and CS3. Faculty can assist in collecting this data in their classes. *[Contact: Undergraduate Coordinator]*
M2a: We will collect the satisfaction data and summarize the results.
M2b: A report of student performance will be produced.

G3: To improve retention at all levels, beginning in 2024, all faculty will annually report changes they have made in their activities to improve student outcomes and/or expand the use of effective pedagogical strategies that have been shown to have a positive impact on all the students, especially on students from HUGs.
A3a: Faculty will participate in on- and off-campus workshops, seminars, and training on more inclusive practices and the reasons for them. These will include seminars from the Holmes Cultural Diversity Center and the Center for Teaching and Learning, and a CSE Education Reading Group. The BPC Committee will develop and maintain a list of these opportunities. *[Contact: Department Head]*
A3b: Faculty will include “inclusive best practices” in their teaching. *[Contact: Department Head]*
M3a: The number of faculty that participate in workshops (and the number of workshops) will be recorded. The BPC Committee will generate a website for inclusive practice resources.
M3b: Faculty will report on their practices in their Annual Evaluations.

G4: In order to improve representation in our graduate program, by 2024, at least four faculty every year will involve students from HUGs in the NSF Research Experiences for Undergraduates (REU) program or other undergraduate research experience activities.
A4a: Faculty will participate in REU activities already extant on campus (e.g., Dr. Perkin’s Bioinformatics REU) or off campus (e.g., DREU and AccessComputing). *[Department Head]*
A4b: Faculty will contact MS/regional HBCUs and women serving undergraduate institutions to give research talks & highlight CSE’s REU experiences and graduate study opportunities. *[Contact: Department Head]*
M4a: The number of faculty that participate in the REU activities will be counted.
M4b: The demographic categories of students in the REU programs in which faculty participate will be recorded.
M4c: The number of faculty that participate in research talks at HBCUs & women serving institutions will be recorded.