Departmental BPC Plan
Department of Electrical and Computer Engineering (ECE)
Texas A&M University (TAMU)

Effective dates of Plan: 06/25/2024 - 06/25/2026

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1. Context & Data

TAMU, a federally designated Hispanic-Serving Institute by the U.S. Department of Education, is one of the largest universities in the US. As of Fall 2023, it has an enrollment of 77,491 students. The College of Engineering (CoE) is the largest college on TAMU's College Station campus. More than 56% of first-generation CoE students identify as people from groups the NSF defines as underrepresented in computing versus less than 19% among continuing-generation students. Aligned with the NSF goals, we focus on first-generation college students in this BPC plan.

The ECE Dept (with 2,188 students, excluding freshmen) is one of the largest in the CoE. ECE offers two undergraduate degrees: one in Electrical Engineering (ELEN) and another in Computer Engineering (CPEN). The degree in CPEN is administered together with the Department of Computer Science and Engineering (CSE). All B.S. students in the CoE are initially admitted as first-year engineering students and apply for entry to a major (ETAM), typically at the end of their first year. ECE's undergraduate Hispanic population was 23.73% in 2023. In Nov. 2020, CSE and ECE students formed the Aggie Hispanics in Computing (AHIC) student affinity group (see https://www.ahic-tamu.org).

2. Goals

G1: Annually increase the participation of high-school students in activities and programs designed to broaden participation in computing.

G2: Annually increase the enrollment and retention of first-generation students in the TAMU ECE undergraduate and graduate programs.

G3: Support broadening participation in computing by promoting positive culture and annually collecting data to monitor students' experiences of the program.

3. Activities and Measurement

A1: Summer Outreach programs (G1). Faculty can participate in summer outreach programs, focusing on first-generation students throughout Texas with active faculty participation and opportunities for funded research by such students. Measurement: Participation counts; departmental first-generation student enrollment statistics. (Associate Department Head)

A2: Boost student enrollment (G1, G2). Faculty will participate in annual recruitment events to attract first generation Texas high school students to ECE. Measurement: Participation counts; departmental demographics. (Associate Department Head)

A3: Support ECE students interested in computing in their first year (G2). Many first-generation college students in ECE struggle in their first year; the department is

interested in increasing support in their course work. a) Faculty will work with the CSE to support affinity groups such as AHIC to help our students succeed. b) Faculty members will implement peer teaching or other BPC-supportive teaching practices. Measurement: Participation counts in activities; retention and grade statistics. (Associate Department Head)

A4: Hire more first-generation students as peer teachers and TAs (G2, G3). Faculty will recruit first generation students to serve as peer teachers and TAs, and mentor them in the use of effective and inclusive teaching practices. Measurement: Demographics of the peer teacher and TA population. (Associate Department Head)

A5: Involve more first-generation students in research (G2, G3). Faculty members will mentor senior first-generation students in our well-recognized honors research program. Measurement: research participant counts from first-generation students. (Associate Department Head)

A6: Track retention and attrition among ECE students and faculty (G2, G3). Faculty will collect and report departmental data on student retention and graduation rates to track trends on gender, race and other demographics to make sure that we meet our BPC goals. Faculty retention and attrition will be measured and tracked similarly. Measurement: Demographic attrition and retention data. (Associate Department Head)

A7: Revise ECE curriculum to include BPC awareness activities (G3). Faculty will work with the ECE Undergraduate and Graduate Studies Committees to design activities that demonstrate the impact of ECE technology (such as the Internet, smart phones and AI) on culture for all required ECE courses. Measurement: number of activities implemented. (Associate Department Head)

A8: Improve teaching and foster connections with local colleges (G2, G3). Faculty will: a) Engage with the TAMU Institute for Engineering Education & Innovation (IEEI) and the TAMU Center for Teaching Excellence to foster more welcoming teaching environments. b) Participate in IEEI community events with Prairie View A&M (PVAMU), a local HBCU, and TAMU & PVAMU faculty can serve on each other's graduate committees. Measurement: faculty participation count. (Associate Department Head)

A9: Periodically conduct surveys (G3). Faculty will work with the department to conduct surveys, using feedback from student organizations such as the IEEE and affinity groups such as the AHIC to design survey questions, and to hold student town halls with respective groups to discuss survey results and address raised issues and concerns. Measurement: survey and town hall participant count. (Associate Department Head)

A10: Attend computing-related conferences (G2, G3). Faculty will recruit and sponsor first generation students to attend conferences such as Grace Hopper Celebration of Women in Computing. Measurement: student participation and presentation count. (Associate Department Head)

A11: Acknowledge BPC activities in faculty annual review (G3). The department will encourage faculty to list their PBPC activities along with teaching, research, and service in their annual faculty progress reports (FPRs). Measurement: number of faculty including BPC activities in their annual FPRs. (Department Head)