

**Departmental Broadening Participation in Computing (BPC) Plan
Department of Electrical and Computer Engineering**

Rutgers, The State University of New Jersey – New Brunswick



Effective dates of the Plan: 06/30/2023- 06/30/2025

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Context

Rutgers (RU), the State University of New Jersey – New Brunswick, is the 8th oldest public institution in the US with an undergraduate (UG) enrollment of 36,152 (50.4% men and 49.6% women). RU is also one of the most ethnically diverse public institutions in the US, where over half of the undergraduate and graduate populations are non-white, and ~75% of UGs receive financial aid. The School of Engineering (SoE) has an acceptance rate of 14.5% and a four-year graduation rate of 65%. RU's SoE is ranked 21st in US for awarding engineering BS degrees, and 23rd and 33rd in the US for graduation of women and students from underrepresented groups (URGs) in engineering (URGs = African American/Black, Hispanic, Indigenous American, and Pacific Islander), respectively.

The graduation demographics (number and proportions of the populations) of the SoE and the Electrical and Computer Engineering (ECE) Department are presented in **Table 1**. The graduation demographics for women and students from URGs as reported by the American Society of Engineering Education – *Engineering by the Numbers* (national average values) are also provided in this table. According to **Table 1**, the proportion of women graduating from the Rutgers' Electrical and Computing Engineering (ECE) Department meets the national average in 2021. However, the proportion of students from URGs graduating with BS degrees fell short of ASEE national averages in 2021.

Table 1. Graduation population and proportions of the total population for RU's SoE and ECE as compared to the national averages according to ASEE's *Engineering by the Numbers*.

Rutgers 2019 – 2020 Academic Year	Women	URG	ASEE 2020 (Total=149,442, Electrical/Computer=4,135)	
			Women	URG
Electrical & Computer Eng. (N = 265)	38 (14.3%)	34 (12.8%)	Electrical & Computer N = 773, 18.7%	Electrical & Computer N = 493, 11.9%
School of Engineering Total (N = 986)	238 (24.1%)	142 (14.4%)	Engineering Total N = 34,372, 23.0%	Engineering Total N = 23,902, 15.5%
2021 – 2022 Academic Year	Women	URG	ASEE 2021 (Total=146,233, Electrical/Computer=3,700)	
			Women	URG
Electrical & Computer Eng. (N = 235)	45 (19.1%)	26 (11.1%)	Engineering Total N = 35,096, 24.0%	Engineering Total N = 24,634, 16.5%
School of Engineering Total (N = 908)	250 (28.5%)	147 (16.2%)	Electrical & Computer N = 707, 19.1%	Electrical & Computer N = 512, 13.8%

Strategy (Goals (G), Activities (A), and Measures (M))

G1: Department Demographics: Each semester, demographic information (race/ethnicity and gender) describing the undergraduate (UG) and graduate student, faculty and staff populations will be presented.

A1: Faculty from the SoE DEI committee will aggregate and share this data with ECE and SoE during faculty meetings (Cook-Chennault).

M1: Data collected will be annually tracked, analyzed, and shared with the faculty. Presentations will be tracked. (DEI Committee).

G2: UG Graduation Rates: By May 1, 2023, track the graduation rate of students from URGs in ECE (% of admitted students who graduate). Increase this rate each subsequent year.

A2a. Faculty from the SoE DEI committee and ECE UG directors will establish a process to monitor the graduation rates for UGs (Chen and Cook-Chennault).

A2c. Faculty will contact underrepresented students within the ECE Department and connect them with affinity groups (NSBE, SHPE, SASE, SWE, and oSTEM) and ECE focused student organizations that provide professional development and student peer mentoring support (Chen).

M2. Track faculty involvement in initiatives, student engagement in affinity groups, and graduation rates of those who are and are not engaged with affinity groups (DEI committee and Cook-Chennault).

G3. Inclusive Teaching and Mentoring: During the plan dates, the faculty and teaching assistants will participate in workshops aimed at enhancing their inclusive teaching practices and mentorship skills. Participation in workshops will increase by 20% each year of the plan.

A3a. Establish a mechanism for tracking faculty and teaching assistant participation in teaching workshops and mentoring programs (Chen, SoE Department Chairs, and Cook-Chennault).

A3b. Faculty attend inclusive teaching events through seminars provided externally or by the CTAAR inclusive and accessible teaching workshops (DEI Committee).

M3. Track faculty engagement and evidence of modified course materials via an annual survey (Cook-Chennault).

G4. Student Satisfaction and Sense of Belonging within SoE: Establish a process for understanding students' experiences within the SoE and ECE Department by April 15, 2023. Collect and use data in 2023-2024.

A4a. Create a questionnaire framed on validated instruments for student belonging and satisfaction (Cook-Chennault).

A4b. Faculty encourage students to complete the questionnaire (Chen, UG and Grad directors).

A4c. Conduct interviews and focus group meetings to glean student perceptions and experiences about ECE (Cook-Chennault and DEI committee).

A4c. Use information gleaned from the climate survey to understand what types of activities and practices are needed to better support UG students (DEI committee and UG directors).

M4a. Track response rates, responses, and discussions in faculty meetings (DEI committee and Cook-Chennault).

M4b. Data gleaned from students and faculty will be used to inform the SoE DEI Strategic Plan objectives in the year following the acquisition of the data.

G5. Student Research: Each year of the program, a minimum of 3 faculty will pursue REU supplements and/or collaborate with existing experiential research programs at Rutgers to provide opportunities for women and students from URGs to delve into the engineering and computing fields (Chen).

A5a. Faculty and graduate students working in their lab will receive mentorship training to work with students engaged in research in their labs (Cook-Chennault).

A5b. The SoE leadership will provide an overview of the existing experiential research programs for middle, high school, and UGs on RU's campus during SoE faculty meetings and in email flyers (DEI committee, SoE dean, and Cook-Chennault).

A5c. Faculty from ECE will partner with established RU outreach programs to develop engaging projects for middle, high school, and UG students (DEI committee and Cook-Chennault).

M5. Faculty participation and engagement, and student participation outcomes (from research programs) will be tracked and presented during faculty and schoolwide meetings. (Teaching faculty member and Cook-Chennault)