



The University of Iowa College of Engineering

Application to the
American Society of Engineering Education
Diversity Recognition Program

Contents	Description
Narrative	Describes the current DEI climate within the college and contextualizes the priorities of the DEI plan
Plan	Engineering strategic plan to foster diversity, equity, and inclusion

Common abbreviations used in these documents:

COE: University of Iowa College of Engineering	DEO: Department Executive Officer
EDEIC: Engineering DEI Council	ESAC: Engineering Staff Advisory Council
EFC: Engineering Faculty Council	URM: Historically under-represented or minoritized

University of Iowa DEI Mission and Infrastructure

Excellence through Diversity, Equity, and Inclusion. The University of Iowa’s status as a premier research university depends on the robust exchange of ideas. The diversity of our students, faculty, and staff helps us fulfill our mission to explore, discover, create, and engage. Thus, we are committed to supporting every Hawkeye’s pursuit of excellence. As we enhance the breadth and depth of our perspectives, we purposefully prepare for our future. Our ability to foster an equitable and inclusive environment for all who join the UI family will determine our collective success. We eagerly accept this challenge. At the UI, we achieve excellence through diversity, equity, and inclusion. *(from the UI DEI Action Plan)*

Overseen by the Associate Vice President for DEI, the *Division of Diversity, Equity, and Inclusion* consists of three units:

1. The *Center for Diversity & Enrichment* brings together under one umbrella a variety of programs, offices, and services that work to create a welcoming climate for students, staff and faculty from communities underrepresented in higher education.
2. The *Diversity Resources* unit provides consultation, resource, and skill-building opportunities for University of Iowa faculty, staff, students, and guests in order to foster an inclusive, respectful, and equitable university community.
3. The *Office of Equal Opportunity and Diversity* implements diversity policies at the University of Iowa and supports the university’s compliance with federal/state laws and regulations and university policies prohibiting discrimination, harassment, retaliation and sexual harassment by or towards any UI community member.

Campus-wide, DEI efforts are also supported by *seven affinity-based Diversity Councils* and numerous *Inclusion Committees*.

College of Engineering DEI Mission and Infrastructure

The College of Engineering at the University of Iowa is driven by talented faculty, staff, and students who are producing knowledge to address grand challenges around advanced technologies, health sciences, sustainability, energy, and the environment. Our graduates are ethical, globally-aware citizens whose work while at the University of Iowa and throughout their careers make the world safer and our use of resources more efficient. As a center of innovation and discovery, the people who make up the College of Engineering are undoubtedly improving quality of life for our Iowa community as well as for people across the United States and around the world. *The College of Engineering’s mission is to build an inclusive, diverse, and responsible community that is continually seeking creative solutions to elevate humanity.*

Engineering Diversity, Equity, and Inclusion Council (Engineering DEI Council)

In response to a growing interest and need for engagement in DEI efforts, the Engineering Diversity, Equity, and Inclusion Council was established in Fall 2018 and was charged as follows:

- Provide leadership within the College of Engineering to promote and achieve a culture that values diversity, equity, and inclusion (DEI), especially racial/ethnic and gender diversity, as evidenced by the College’s policies and practices;
- Assess the current state of the College of Engineering climate for DEI;
- Lead the creation of the College of Engineering’s Diversity, Equity, and Inclusion Action Plan with input from faculty, staff, and students; oversee implementation of the Action Plan; assess the effectiveness of outcomes of the Action Plan; and
- Advise the College about strategies and best practices related to recruitment and retention of female and underrepresented faculty, staff, and students.

Co-chaired by one staff member and one faculty member, the Engineering DEI Council has grown to now include 24 total members (as of Fall 2020): six undergraduates, four graduate students, six staff (including one co-chair), and eight faculty (including one co-chair, one DEO, and one Associate Dean). In the Fall of 2020, dynamic sub-committees were formed to address four broad action areas: 1) data collection and analysis; 2) amplification of best practices; 3) education and training for a culture of inclusion; and 4) visibility and accessibility of information and resources.

In the two years since the Engineering DEI Council was formed, the group has successfully executed several major, impactful milestones. For example, the council established DEI Initiative Grants, which give the opportunity for COE students, staff, and faculty to secure funding, as individuals, teams, organizations, and/or departments, for projects that promote and/or enhance DEI within the

college. Approximately \$9,000 was distributed in FY19 for nine initiatives, and \$11,000 in FY20 for 10 initiatives (several are described in the narrative below). Importantly, the Engineering DEI Council organized and sponsored 15 “Listening Posts” with various student, faculty, and staff groups during Spring 2019 (see **Appendix A** for a summary), gathered further qualitative data from the Campus Climate and Working at Iowa Surveys (data not included), and carefully curated demographic diversity data for COE students, staff, and faculty (**Appendix B**). Moreover, based on assessment using these metrics, the Engineering DEI Council has made and continues to make important recommendations that have shaped the COE Strategic Plan.

Implementation and Assessment of the DEI Plan

Diversity, equity, inclusion, and community form the basis of our COE Strategic Plan for 2021-2026. As such, our over-arching DEI vision for 2021-2026, drawn from the COE Strategic Plan, is to create an environment in which all members of the collegiate community (students, staff, and faculty) are welcomed and supported, and where differing perspectives and contributions are sought out and valued. Below we briefly describe our activities and progress towards implementing the DEI Plan for 2021-2026.

GOAL 1: Design and implement equitable policies and practices that ensure everyone can thrive.

Critical Task 1A. Ensure that college policies, practices, and communication channels are transparent and equitable.

- Structures and protocols for holding COE Listening Posts were established in Spring 2019; these can now be implemented regularly to gather feedback.
- In Fall 2020, an Engineering DEI Council sub-committee was formed to amplify how DEI plans at college, department, and center levels can be more responsive to best practice.
- During AY18-19, a policy was created to enable a course release after a child is added to a faculty’s household (e.g., by birth or adoption).
- As of Fall 2020, individual departments are actively working to incorporate DEI efforts into the annual review process for faculty and staff.
- The 2020-2021 collegiate P&T Policy committee is actively working with the Engineering DEI Council, department P&T committees, DEOs, and the Provost’s Office to determine how best to align and harmonize the P&T Process and Evaluation Criteria with the University’s strategic goals related to fostering Diversity, Equity, and Inclusion.

Critical Task 1B. Foster equity in undergraduate student success.

- The Student Equity and Achievement Team was established in Fall 2019 (see **Appendix C**)
- A staff position, Director of Undergraduate Diversity Programs and Academic Advisor, was established in Spring 2020, with responsibility to oversee the newly established Inclusion Agent program (see below) and provide guidance and support for COE-affiliated affinity-based student organizations.
- A group of student staff positions, known as Inclusion Agents, was established, with responsibility to promote a welcoming and inclusive environment in the College of Engineering (see **Appendix C**).
- Several programs, resources, and events have been established to promote success of vulnerable student populations. Examples include Study Tables, Academic Success Workshops for students on probation, and a virtual hub with information and resources (see **Appendix C** for more details).
- In 2019, the EDEIC established undergraduate DEI Scholarships, which award up to twelve \$500 scholarships, dispersed each spring semester. Scholarships are open to all undergraduate students promoting DEI activities in the COE.
- Two faculty-led research projects have been established: “Minority Undergraduate Engineering Students at UI: Characterizing Their Successes and Struggles with a Research-Based, Data-Driven Approach” (Engineering DEI Council-sponsored initiative) and “Matriculation and Well-Being Under Emergent Events (MWEE): Using Data to Empower Campus Communities in Times of Crisis” (NSF RAPID).
- In an effort to combat bias associated with ACT exam results, starting with the Fall 2019 incoming class, a minimum ACT score is no longer required for admission. Rather, the composite ACT score contributes to a formula which accounts for HS GPA as well as the number of years of HS courses completed in the core subject areas (i.e., English, mathematics, science, social studies, and world language).

Critical Task 1C. Foster equity in research practices and graduate education.

- The Engineering DEI Council Data Analysis sub-committee is actively working to establish a mechanism for collecting retention and graduation time data for graduate students.
- In an effort to combat bias associated with GRE exam results, starting with the Spring 2021 incoming class, a GRE score is no longer required for application or admission to the BME graduate program.
- In its first year, the DEI Council awarded \$1,600 to support student registrations for a national STEM diversity conference. Thereafter, such awards were made a priority and now each semester, the DEI Council grants professional development awards of up to \$500 each to students in the College of Engineering (undergraduate or graduate). The awards encourage and facilitate student opportunities to participate virtually or in person in national/international meetings, symposia, conferences, or other professional development opportunities that promote DEI. \$9,000 awarded in AY2019-2020; call is open for AY2020-2021 applications.

GOAL 2. Create and sustain an inclusive and collaborative community that fosters a sense of belonging.**Critical Task 2A. Educate and train students, faculty, staff, and administrators on how to be more inclusive and collaborative.**

- In Fall 2020, an Engineering DEI Council sub-committee was formed to create a sustainable plan to educate and train faculty, staff, and students on how to create and foster a culture of inclusive excellence in the college.
- In Fall 2019, the Engineering DEI Council funded the establishment of a DEI Reading Group to provide a forum for all community members to explore issues related to diversity and equity through discussion of readings from a broad variety of sources and to help establish a sense of community within the COE. Membership has grown from 20 in AY19-20 to 40 as of Fall 2020.
- The Engineering DEI Council hosted its 1st annual Celebrating Diversity in Engineering Conference for the graduate student body in January 2020 (81 students from all six departments). The inaugural event emphasized remaining true to one's self and social identity, especially in STEM. Future iterations will also serve to highlight the intersections between DEI and COE research.
- DEOs are actively promoting and facilitating faculty and staff participation in DEI educational workshops hosted by the UI Diversity Resources unit. As of Fall 2019, 13% of faculty and 17% of staff had attended at least one such workshop.
- The Engineering DEI Council created a Celebrating Diversity in Engineering seminar, delivered to a combined total of 965 first-year engineers in Fall 2019 and Fall 2020 in the course, "Engineering Success Seminar." Survey data were collected, and the results are in preparation for publication. This seminar is ongoing in Fall 2020 and is planned for each fall semester hereafter.
- An engineering ethics initiative was launched in the Summer of 2019 with the goal of equipping COE graduates with practical tools for discovering and confronting ethical and societal dilemmas as they naturally arise in their future careers. Four faculty-led proposals were selected, and their ethics modules implemented in Fall 2019, with continuation funds awarded for two modules for Fall 2020.
- The COE recently (Spring 2020) created and introduced a new collaborative course, 'Intro to AI and Machine Learning in Engineering', with faculty input from each department. The course is ongoing in Fall 2020 and scheduled to be offered in Spring 2021.

Critical Task 2B. Organize, support, and promote DEI-centric workshops, events, and recognition.

- A new COE DEI resources website houses upcoming diversity events and links to each of the affinity student organizations.
- The Engineering DEI Council has established a mechanism for broadcasting monthly updates via e-mail to all COE community members.
- In addition to the DEI-centric educational workshops and events already mentioned above, the Engineering DEI Council has funded numerous initiatives to help bolster diverse communities via affinity-based organizations and programs. Participating parties include the National Society for Black Engineers (NSBE) and affiliated Black Girls Do Science, the Society of Hispanic Professional Engineers (SHPE), first-generation college students, the Female Alliance of Civil Engineers (FACE), the Society of Women Engineers (SWE), Women in Science and Engineering (WiSE), Continental Crossings, Womxn's Summit,

International Education Week, and the Mayor's Youth Empowerment Program. Activities funded include career workshops, visiting speakers, social and advocacy events, K-12 outreach events, service-learning projects, and conference travel.

- An *annual DEI Leadership Summit* is planned for a Spring 2021 launch. This meeting will provide ongoing opportunities for ideas to be exchanged within the college and for COE progress to be reviewed by an external expert on DEI in Higher Education. Their advisement and feedback will enable continuous improvement and refinement of priorities, goals, and strategies.

Critical Task 2C. Expand mentoring, engagement, and on-boarding programs for students, staff, and faculty.

- The Engineering DEI Council has funded numerous initiatives to help *bolster diverse communities via affinity-based organizations and programs*, as described in Critical Task 2B.
- The Associate Dean for Graduate Programs, Research and Faculty and each department's Director of Graduate Studies are *actively collaborating to establish college-wide mentoring and engagement structures for graduate students*.
- During AY19-20, the Engineering DEI Council and Associate Dean for Graduate Programs, Research, and Faculty established a *Lunch and Learn workshop series for tenure-track assistant professors*. Topics to date have ranged from managing a research group to effective classroom teaching strategies.
- The University of Iowa continues to participate in the National Center for Faculty Development and Diversity (NCFDD), and the COE continues to financially support and socially promote participation in *NCFDD workshops*, UI-hosted *grant-writing and professional development workshops*, and regional meetings such as the *Big Ten's Women's Workshop*.

GOAL 3. Diversify student, faculty, staff, and leadership populations.

Critical Task 3. Invest in and develop best practices for *recruiting* diverse students, faculty, and staff.

- In Fall 2020, an *Engineering DEI Council sub-committee* was formed to complete an analysis of COE diversity data. Analysis of demographic data from 2017 – 2020 has been completed (**Appendix B**), and collection and analysis of additional applicant pool, student success, and retention data are ongoing.
- During AY20-21, the Student Equity and Achievement Team is 1) *actively reviewing undergraduate orientation, Engineering Day, and prospective student visits* through a DEI lens, with anticipated recommendations for change as appropriate; and 2) identifying and *prioritizing recruitment and retention efforts aimed at under-represented undergraduate students*.
- The Associate Dean for Graduate Programs, Research and Faculty and each department's Director of Graduate Studies are *actively collaborating to establish college-wide recruitment efforts and prospective student visits*. These will likely include targeted recruitment of under-represented students at field-specific and affinity-based conferences and community-building events for prospective female and URM students during campus visits.
- A collaborative NSF Research Traineeship (NRT) to develop a *Sustainable Water Development graduate program* was launched in Fall 2017. Recruitment to this program has been *specifically focused on diversifying the next generation* of water sustainability professionals, including URMs and women. Given the relative size of the hosting department (CEE), this recruiting emphasis may have contributed to the somewhat steady increases in enrollment of women and URMs in COE MS programs and increases in female enrollment in PhD programs (**Tables 2&3, Figures 4-7**).
- The University of Iowa recently established a *Path to Distinction program*, designed to boost recruitment of diverse faculty.
 - The pilot phase during AY19-20 consisted of participation of four departments, *including the Roy J. Carver Department of Biomedical Engineering*, as they conducted tenure track faculty searches.
 - Search committee members received training on *implicit bias and research-informed strategies* to advance diversity, equity, and inclusion in the search process. In addition, the pilot departments were provided with a packet of tools and resources to assist them with implementing these strategies.
 - The pilot results demonstrated that the pilot departments implemented new strategies, that their applicant pools were somewhat more diverse than historical pools, and that interview pools included a significant percentage of candidates from underrepresented populations.
 - The college is actively working to *incorporate these and other best practices into established recruitment practices* for future faculty searches.

APPENDIX A. Summary of Spring 2019 Listening Posts

The DEI Council held fifteen DEI Listening Posts (LPs) geared to several different groups during the Spring 2019 semester. A total of **107** people attended with group sizes ranging from 2 to 22 and participation rates ranging from 1 to 53% of the total CoE population in that group. Six cross-cutting themes appeared in multiple LPs spanning faculty, staff, and students and the DEI council identified these themes as the most critical issues we need to address in moving forward to create a more inclusive, equitable, and diverse environment in the College of Engineering.

- The COE needs a more **diverse faculty and staff** population that is more closely aligned with our student population, particularly with regard to gender and underrepresented status.
- The COE needs to **improve communication** throughout the college regarding policies, resources, and changes.
- The administration, faculty, and staff need to **“buy-in”** to how important it is to create and foster a diverse, equitable, inclusive environment and to make that commitment more **visible** (e.g., through seminars and physical spaces).
- Community building and a sense of belonging are critical to creating an inclusive environment and we need to do more to **foster and support different communities** throughout the college.
- We all (faculty, staff, students) need more **training** on what DEI means and how to support an inclusive environment in our college and classrooms.
- It is unclear **who to go to** if you have concerns, need help, or observe inappropriate behavior.

In addition to the cross-cutting themes identified above, each community offered additional, valuable insights. A few highlights are summarized below.

Several **students** commented that the college is welcoming, and that faculty and staff are supportive. Underrepresented students, as well as transfer students, however, reported feeling isolated (both undergraduate and graduate). Students want existing student organizations to be more visible and it needs to be clearer what their roles and target members are (i.e., undergraduates/graduates, department specific or not). Students would like more exposure and interaction with the college faculty and administration. Faculty advising was identified as being of highly variable quality and that bad advising could have a big influence on a student’s success (again at both undergraduate and graduate level). Students want to feel like they are succeeding and not being set up to fail (e.g., extreme curving on exams).

Staff identified the lack of communication about changes in personnel or other decisions in the college as one of their biggest concerns. Another significant concern raised by staff is that they do not feel respected or valued. Comments also suggest that some staff feel that age, gender, and level of education play a role in how they are treated. Staff commented that faculty have little idea or appreciation for what they do.

Faculty felt that the college lacked commitment to DEI and a stronger vision needed to be articulated. Faculty, similar to staff, identified communication and felt that there was a trend of decisions being made behind closed doors. The new faculty teaching reduction for addition of a minor child policy was mentioned and appreciated. Committee assignments were raised and faculty felt that female and underrepresented faculty were taking on more and that we should look at that more closely. Faculty articulated that they wanted more training on how to talk about DEI and how to create a classroom environment that is more inclusive.

APPENDIX B. Demographic Data for Students, Faculty, and Staff

Undergraduate Students

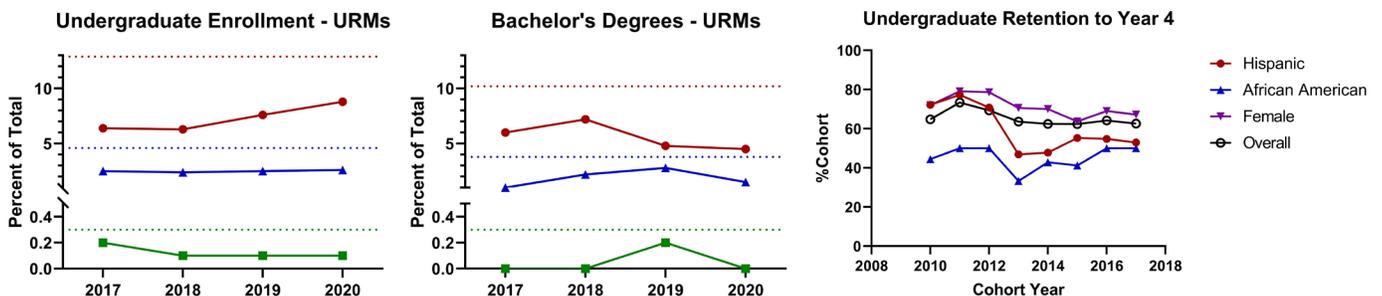


Figure 1. Relative undergraduate enrollment of (left) and bachelor’s degrees conferred to (middle) under-represented students (data points and solid lines) compared to ASEE 2018 national averages (dotted lines). Right: Retention of URM and female undergraduate students to Year 4, as a percent of corresponding Year 1 cohort.

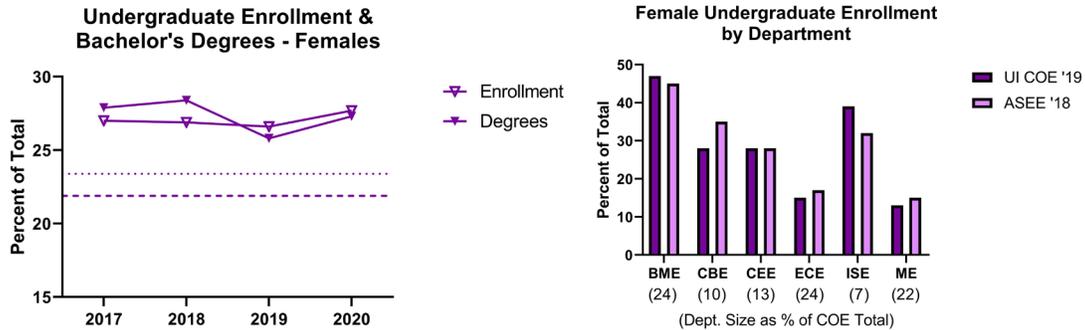


Figure 2. Left: relative undergraduate enrollment of (open triangles) and bachelor’s degrees conferred to (filled triangles) female students compared to ASEE 2018 national average (dotted line for enrollment, dashed line for degrees). Right: department-level relative 2019 undergraduate enrollment of female students compared to ASEE 2018 national averages.

Graduate Students

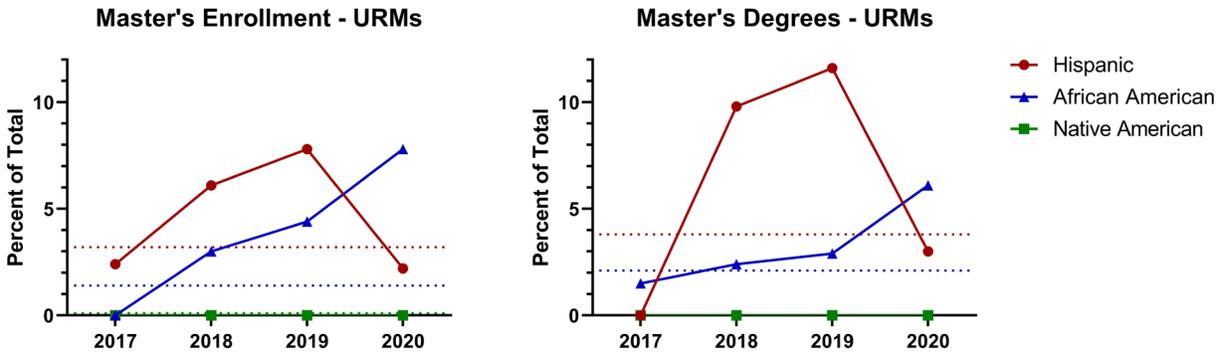


Figure 4. Relative master’s enrollment of and degrees conferred to underrepresented students (data points and solid lines) compared to ASEE 2018 national averages (dotted lines).

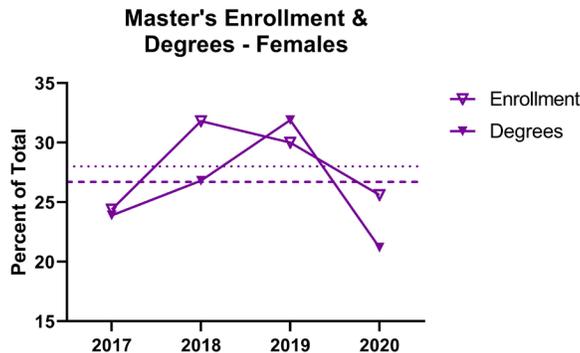


Figure 5. Relative master’s enrollment of (open triangles) and degrees conferred to (filled triangles) female students compared to ASEE 2018 national average (dotted line for enrollment, dashed line for degrees).

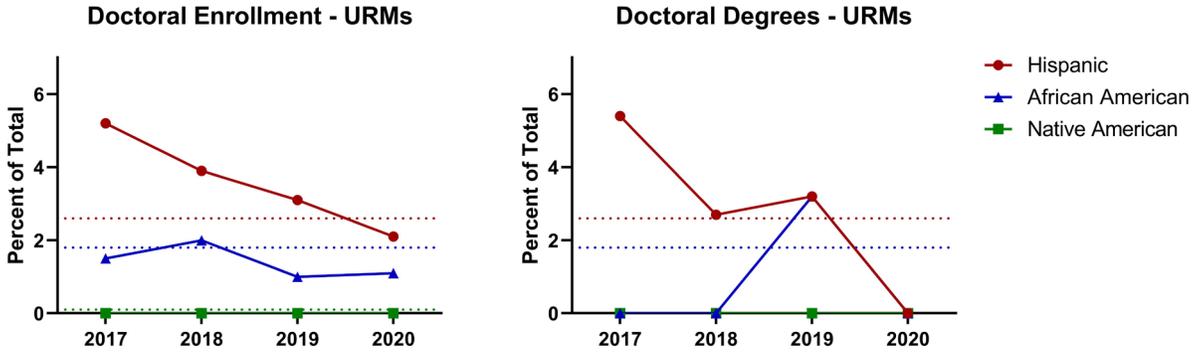


Figure 6. Relative doctoral enrollment of and degrees conferred to underrepresented students (data points and solid lines) compared to ASEE 2018 national averages (dotted lines).

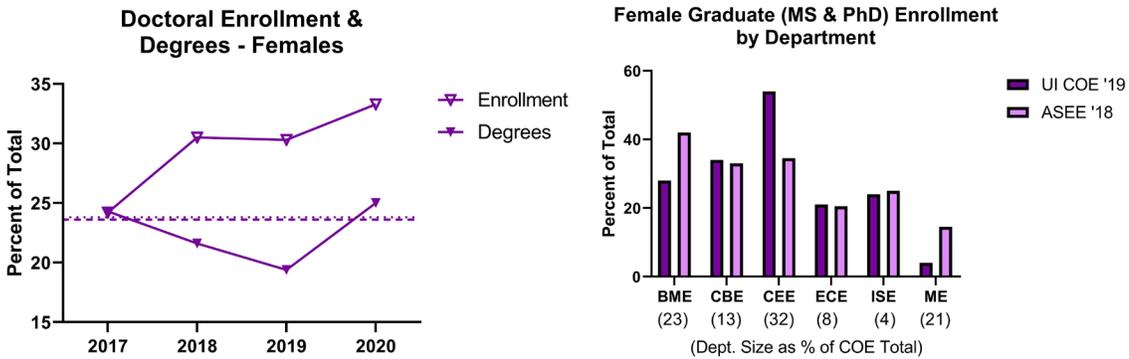


Figure 7. Left: relative doctoral enrollment of (open triangles) and degrees conferred to (filled triangles) female students compared to ASEE 2018 national average (dotted line for enrollment, dashed line for degrees). Right: department-level relative 2019 master’s and doctoral enrollment of female students compared to ASEE 2018 national averages.

Faculty

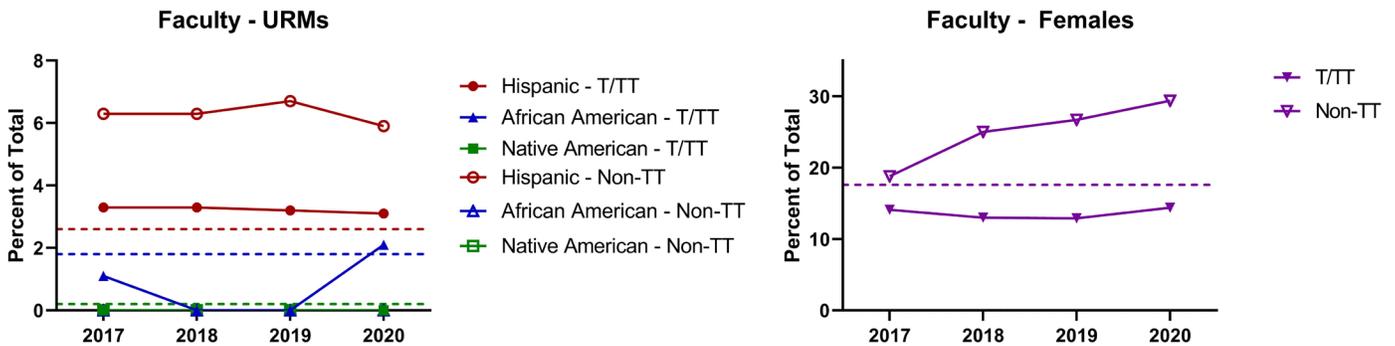


Figure 8. Relative number of URM (left) and female (right) tenured or tenure-track (filled shapes) and non-tenure-track (open shapes) faculty, compared to ASEE 2018 national average for tenure-track faculty (dashed lines).

Staff

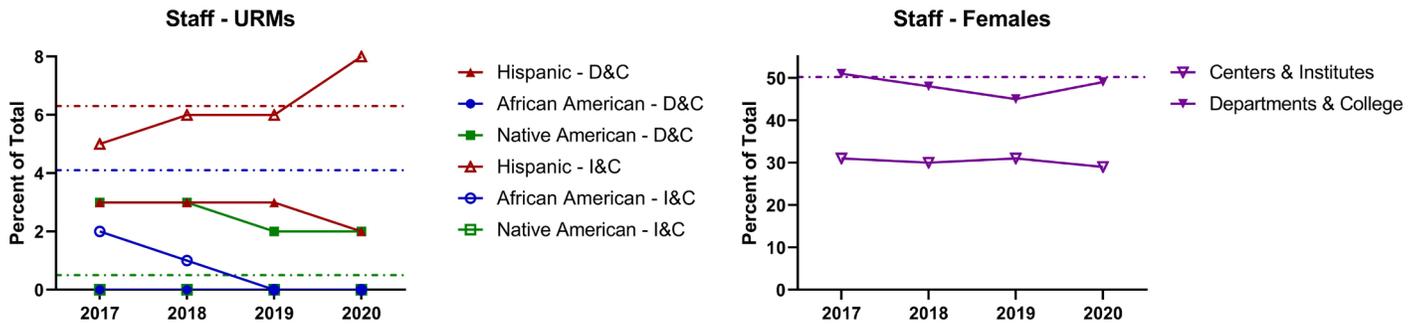


Figure 9. Relative number of URM (left) and female (right) staff at COE research centers and institutes (open shapes) and in academic departments and other collegiate roles (filled shapes), compared to 2019 census estimates for the State of Iowa (mixed dot/dash lines).

APPENDIX C. Infrastructure Supporting Undergraduate Student Success, as Related to DEI

Established in Fall 2019, the **Student Equity and Achievement Team**, a sub-team of the Engineering Student Success Team (Student Services), was charged by the Associate Dean for Academic Programs with making recommendations to provide a pathway to inclusive excellence throughout the undergraduate experience. The overarching goal of the team is to help coordinate, lead, and support efforts and initiatives to further the accomplishments of all students with an emphasis on eliminating achievement gaps for disproportionately impacted students. These activities will initiate prior to recruitment, with outreach initiatives, and extend through graduation. The committee also assists in implementing the action plans set forth by the collegiate Engineering DEI Council.

Specific Goals:

- Assist with the implementation of the EDEIC recommendations as they relate to UG education
- Be DEI advocates by promoting awareness of policies and support training (workshops, lectures, and seminars) on topics relating to diversity, equity, and inclusion.
- Increase successful outcomes for underrepresented students.
- Provide a venue for dialogue, and means to disseminate information among participants and constituencies, so as to fully inform and integrate student success and equity efforts across the college.
- Highlight student / staff contributions to DEI initiatives (social media, collegiate display monitors, etc.)

Three additional teams were formed during Fall 2019, all targeted at Student Success: Instructional Support / Academic Success, Advising, and Student Leadership Development. Furthermore, in Spring 2020, a new staff position, **Director of Undergraduate Diversity Programs and Academic Advisor**, was also created and filled. This staff member oversees the newly established Inclusion Agent program (see below) and provides guidance and support for COE-affiliated affinity-based student organizations. These groups organize and host events for both the collegiate student body and the local community.

Inclusion Agents are undergraduate student staff members that promote a welcoming and inclusive environment in the College of Engineering. Inclusion Agents work individually and as a team to design and implement diversity, equity, and inclusion (DEI) workshops, events, and programs for undergraduate students that foster a sense of belonging. Inclusion Agents also help coordinate the MESA Tutoring program for 5th-12th graders that are traditionally underrepresented in STEM fields.

Study Tables. Some students learn and retain engineering concepts better when they work in groups. Forming such groups organically may prove challenging for many first-year students, notably first-generation and URM students. Study Tables allow a small group of students interested in extra study time to meet regularly to discuss homework and concepts from the course. Study tables were introduced in the core engineering course Statics in Fall 2019. With the move to predominantly online instruction in Fall 2020, we made a concerted effort to facilitate Study Tables in both core and departmental courses.

The College of Engineering Virtual Hub. In Fall 2020, the Engineering Student Success Team established a virtual hub for all undergraduate students: a centralized location for access to information regarding DEI Resources (e.g., Cultural Center events), Academic Support (i.e., tutoring and workshops), Academic Advising, upcoming Activities, Events, and Training Opportunities. In addition, Career Services / Professional Development, Student Organizations, and Student Support Resources (e.g. remote learning, mental health, etc.) are highlighted.

Academic Success Workshops. In order to target students at higher academic risk, students placed on or continued on academic probation for Spring 2020 were required to attend one or two, respectively, of the following workshops, hosted by the Instructional Support and Academic Success team. A total of 96 individual students attended the workshops, with 12 students attending two workshops. Of this total, 93 students were required to attend due to their probation status.

- Reading & Note Taking: How to Actively Read & Take Organized Notes
- Daily Habits of Successful Students: Creating Habits that Make a Big Difference
- General Study Skills: Finding an Environment and Method that Work for You
- Bouncing Back in Times of Stress: Resiliency
- Test Taking Skills & Strategies: How to be a More Effective Test Taker at Iowa
- So Much to Do, So Little Time: Time Management Strategies for Academic Success

Definitions and Vision

In the broadest context, *diversity* refers to all aspects of human difference, social identity, and social group difference. We commit to consideration of the intersection of identities whenever possible; that is, we recognize that each individual has multiple individual identities. Thus, we also acknowledge that membership in a group does not mean acceptance of homogeneity of a group since every individual experiences identity differently. Because the National Science Foundation defines women, persons with disabilities, and three racial and ethnic groups – Blacks, Hispanics, and American Indians or Alaska Natives – as underrepresented in science and engineering, these identities are given particular emphasis in this Diversity, Equity, and Inclusion Strategic Plan. Here, we use the term *equity* to refer to practices and policies that ensure that all campus community members can thrive, with acknowledgement and efforts to address historic and current structural inequities. Meanwhile, the term *inclusion* refers to a campus community where all members are and feel respected, have a sense of belonging, and are able to participate and achieve to their potential. Collectively, diversity, equity, and inclusion are abbreviated in this document as DEI.

The College of Engineering at the University of Iowa is driven by talented faculty, staff, and students who are producing knowledge to address grand challenges around advanced technologies, health sciences, sustainability, energy, and the environment. Our graduates are ethical, globally-aware citizens whose work while at the University of Iowa and throughout their careers make the world safer and our use of resources more efficient. As a center of innovation and discovery, the people who make up the College of Engineering are undoubtedly improving quality of life for our Iowa community as well as for people across the United States and around the world. The College of Engineering's mission is to build an inclusive, diverse, and responsible community that is continually seeking creative solutions to elevate humanity. As such, our over-arching DEI vision is to create an environment in which all members of the collegiate community (students, staff, and faculty) are welcomed and supported, and where differing perspectives and contributions are sought out and valued.

Common abbreviations used in these documents:

COE: University of Iowa College of Engineering	DEO: Department Executive Officer
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Overall Motivating Factors

Fostering welcoming and *inclusive* environments in higher education produces myriad social and cultural benefits to all of the organization's stakeholders. Furthermore, fostering *diversity* and *equity* in higher education and other systems of power is critical to ensuring that everyone has equal access to opportunities to thrive regardless of their race, ethnicity, gender, or other marginalized differences. Thus, as part of the higher education system, the College of Engineering has a professional and ethical responsibility to ensure diverse, equitable, and inclusive experiences for all members of our community. Furthermore, recent events that have highlighted police violence against Black Americans, racial-based healthcare disparities, and gender- and racial-based socioeconomic disparities resulting from the COVID-19 pandemic have also increased awareness of the urgent need to re-evaluate policies and systemic practices. As a result, many members of the College of Engineering community are grappling with concepts of social justice, Black Lives Matter, and anti-racism, with renewed discussion, focus, and commitment to tackling these issues through the higher education lens.

In addition to the social and cultural benefits afforded by a focus on DEI, there are tangible and measurable benefits to diversity that immediately correlate to the specific goals of engineering education and academic research. These underscore the synergy between DEI and all three arms of the traditional academic mission and can be related to targets specified by ABET Student Outcomes. For example, diverse cultural perspectives inspire creativity and drive innovation, and have been shown to foster high performance. Diverse teams bring different talents and skillsets together, all working toward a common goal, with each member contributing a unique set of skills and perspectives. As a result, such teams often yield a more creative set of solutions to specific problems. They tend to be more productive and outperform their less diverse counterparts. Moreover, they provide a greater opportunity for personal and professional growth.

Priorities, Goals, and Initiatives

The overall College of Engineering Strategic Plan for 2021-2026 is currently in the final stages of revision and will be finalized in March 2021. Many of the goals, tasks, and action items in this new strategic plan are tightly integrated with DEI efforts. Thus, relevant elements have either been included verbatim or slightly adapted to this application, as indicated below.

GOAL 1. Design and implement equitable policies and practices that ensure everyone can thrive.

Critical Task 1A. Ensure that college policies, practices, and communication channels are transparent and equitable.

Background and Motivation

Survey feedback (data not included) indicates that COE community members perceive inequities in some policies and practices. Furthermore, Listening Post feedback from Spring 2019 (**Narrative Appendix A**), highlights a need for a specific policy for reducing faculty teaching load after addition of a minor to their household (e.g., by birth or adoption), and for more open communication channels and opportunities for students, faculty, and staff to provide feedback to COE leaders on DEI issues.

Tactics and Action Items

- Clearly communicate expectations and accountability to all members of the COE community.
- Review current college policies, procedures, and structures using lenses from established DEI research.
- Create more feedback opportunities throughout the college for students, staff, and faculty.
- Conduct exit interviews of students, staff, and faculty.

Indicators of Success

- Transparent and equitable college policies, practices, and communication channels that align with best practices.
- Improvement of Campus Climate Survey and Working at Iowa survey results.
- Evaluation of faculty, staff, and administrators includes consideration of DEI engagement.

Accountable Parties: COE Leadership Team, DEOs, Engineering DEI Council (including the Best Practices sub-committee), COE Human Resources (HR), Engineering Faculty Council (EFC), Engineering Staff Advisory Council (ESAC)

Critical Task 1B. Foster equity in undergraduate student success.

Background and Motivation

Retention of under-represented undergraduate students to Year 4 in the COE has been consistently below the aggregate average since Cohort Year 2013 (**Narrative Appendix B, Figure 1**). Since student success and support are factors that may influence retention, this disparity suggests that equitable access to resources may improve retention of URM students. Furthermore, COE Listening Post feedback (**Narrative Appendix A**) indicates that the quality of academic advising is highly variable, perhaps “making or breaking” a student’s success.

Tactics and Action Items

- Continue to identify, monitor, and address barriers to student success.
- Increase scholarship funds available to URM students and awareness of funding opportunities.
- Strengthen connections between affinity-based student organizations and collaborative learning environments, co-curricular activities, and career preparation resources.
- Host DEI in advising workshops for faculty and staff.

Indicators of Success

- Continuous improvement of student success programs to meet evolving needs.
- Reduced disparities in retention, rates of Ds, Fs, and withdrawals for core course rates, and 4- and 6-year graduation rates between historically under-represented students and their peers.
- Improved consistency and quality of advising, as indicated by student feedback.

Accountable Parties: Associate Dean for Academic Programs, Engineering Student Success Team (including the Student Equity special team), DEOs, Department Undergraduate Committees, Academic Advisors (Faculty and Staff)

Critical Task 1C. Foster equity in research practices and graduate education.**Background and Motivation**

Historically, retention rates and graduation time for MS and PhD students have not been collected in our COE. However, recent enrollment and graduation data indicate that the percentage of degrees awarded to female and URM students is not proportional to their enrollment (**Narrative Appendix B, Figures 3-6**). This disparity suggests that female and URM graduate students may be retained to a lesser extent than their respective non-URM peers. Furthermore, Listening Post feedback (**Narrative Appendix A**), indicates a need for acknowledgement of graduate student contributions, and fair evaluation of “non-traditional” or highly collaborative scholarship by students, faculty, and staff.

Tactics and Action Items

- Develop fair metrics, vetted by faculty and staff, that properly value and acknowledge diverse scholarly contributions to the college/university mission, including interdisciplinary and collaborative work.
- Increase recognition of and credit to graduate students for their achievements.
- Review graduate applicant evaluation practices across the college and align with best practice as needed.

Indicators of Success

- Establishment, approval, and implementation of college-wide policy for evaluating faculty and staff scholarly work for promotion, tenure, and other evaluations.
- Establishment and implementation of criteria and policies for assigning credit in inter-disciplinary work.
- Broadcast achievements of graduate students at least once a month through website, social media, and print.
- Alignment of graduate applicant evaluation with equitable practices.
- Analysis of graduate student success measures.

Accountable Parties: Associate Dean for Graduate Programs, Research and Faculty, Engineering DEI Council (including the Best Practices and Data Analysis sub-committees), Leaders of Research Centers and Institutes, DEOs, Directors of Graduate Studies, Department Graduate Committees, EFC, ESAC

GOAL 2. Create and sustain an inclusive and collaborative community that fosters a sense of belonging.**Critical Task 2A. Educate and train students, faculty, staff, and administrators on how to be more inclusive and collaborative.****Background and Motivation**

Listening Post feedback (**Narrative Appendix A**) across all community groups indicates a desire for more learning opportunities around DEI topics and best practices. This critical task is also imperative for maintaining the distributed accountability woven into our DEI Plan.

Tactics and Action Items

- Develop and support cross-cutting communities of DEI learning and discussion within the college.
- Promote and facilitate faculty and staff participation in DEI programs and workshops sponsored by the university (e.g., NCBI and BUILD) and national organizations (e.g., ASEE).
- Incorporate ethics and principles of equity and inclusion into the undergraduate curriculum.
- Establish new cross-disciplinary courses and projects in the college to foster appreciation for diverse perspectives.

Indicators of Success

- Increased participation in collegiate, university, and/or external DEI learning opportunities.
- Improved results on surveys including the Campus Climate Survey, Working at Iowa Survey, and both undergraduate and graduate Student Experiences of Research Universities (SERU) surveys.

Accountable Parties: COE Leadership Team, Engineering DEI Council, COE Human Resources, DEOs, instructors, individual students, faculty, staff, and administrators

Critical Task 2B. Organize, support, and promote DEI-centric workshops, events, and recognition.**Background and Motivation**

Listening Post (**Narrative Appendix A**) and Campus Survey (data not included) feedback indicate a need for increased awareness and visibility of collegiate DEI efforts. Furthermore, these mechanisms highlighted the need for focusing attention on building inclusive and supportive spaces for all students, faculty, and staff, but especially those from under-represented and under-served groups.

Tactics and Action Items

- Expand the collegiate DEI website to be more accessible and comprehensive.
- Regularly communicate the college's ongoing work on DEI and anti-racism as we advance inclusive excellence.
- Convene a COE DEI Leadership Summit where the progress of the EAC members can be shared and examined with DEI scholars.
- Establish and support an annual graduate student event centered on the synergies between DEI and COE research.
- Establish a mechanism for soliciting and funding DEI initiatives led by faculty, staff, and/or students.

Indicators of Success

- Enhanced visibility of and knowledge about DEI efforts within the college.
- Increased faculty, staff, and student engagement with DEI efforts and initiatives.
- Improved results on surveys as described in Critical Task 2A.

Accountable Parties: COE Leadership Team, Engineering DEI Council, COE Communications Team, DEOs, Directors of Research Centers and Institutes

Critical Task 2C. Expand mentoring, engagement, and on-boarding programs for students, staff, and faculty.**Background and Motivation**

Retention disparities among students, faculty, and staff (see **Narrative Appendix B**), as well as Listening Post feedback (**Narrative Appendix A**), indicate a need for increased opportunities for mentoring, engagement, and development for female, URM, and under-served community members. Thus, this critical task is designed to help ensure that, collectively, we invest in the success of each member of the COE community.

Tactics and Action Items

- Expand support for affinity-based student organizations and student success programs.
- Ensure that discipline-based student organizations (i.e. student chapters of discipline-based professional organizations) create inclusive environments for all students
- Strengthen the connections between student organizations and programs with other campus programs as well as faculty and staff within the college.
- Provide supportive COE programming for first generation students, students of color, women, international students (both undergrad and graduate) during their first year.
- Collect and analyze retention and graduation rates for URM and female MS and PhD students across the college
- Increase the submission of graduate student training proposals.
- Facilitate inter-departmental collaboration and sharing of best-practices for graduate student mentoring, academic and professional development, and social and leadership opportunities.
- Establish a learning and mentoring community for assistant professors.

Indicators of Success

- Improved retention rates across all populations.
- Increased undergraduate engagement with and leadership of co-curricular and extra-curricular programs.
- Improved results on surveys as described in Critical Task 2A.

Accountable Parties: COE Leadership Team, Engineering DEI Council (including Data Analysis sub-committee), Student Success Team, Leaders of Student Organizations, DEOs, Directors of Graduate Studies and Departmental Graduate Committees, Directors of Research Centers and Institutes.

GOAL 3. Diversify student, faculty, staff, and leadership populations.**Critical Task 3.** Invest in and develop best practices for *recruiting* diverse students, faculty, and staff.**Background and Motivation**

Enrollment of and degrees awarded to those under-represented in COE undergraduate programs are consistently below the national average (**Narrative Figure 1; additional data removed from public document**). Although overall female enrollment and degrees awarded are each above the national average for undergraduates, there is some degree of variability in this metric across departments (**Narrative Figure 2; additional data removed from public document**). At the graduate level, representation of some URM groups has increased in the recent past, while others have declined; neither enrollment of nor degrees awarded to URM groups has been consistently at or above the national average in recent history (**Narrative Figures 3&5; additional data removed from public document**). Meanwhile, enrollment and degrees awarded to female graduate students is also inconsistent relative to the national average, with a high degree of variability across departments (**Narrative Figures 4&6; additional data removed from public document**).

At the faculty level, Hispanic faculty are represented at a percentage higher than the national average, while African American faculty representation has historically been consistently below the national average, with a recent increase above the national average for tenure-track faculty (**Narrative Figure 7; additional data removed from public document**). The percentage of female tenure-track faculty members is below the national average, while the percentage of non-tenure-track female faculty members is considerably higher (**Narrative Figure 7; additional data removed from public document**). Generally, staff are less diverse than the general population in the State of Iowa, with magnified representation disparities within Research Centers and Institutes (**Narrative Figure 8; additional data removed from public document**).

Tactics and Action Items

- Collect, analyze, and share demographic data, as appropriate, with faculty, staff, and students at least annually.
- Actively advertise and promote open positions (student, faculty, and staff) to targeted groups via campus student organizations (NSBE, SHPE, etc.), national and international affinity-based professional organizations (e.g., NoBCCHE, SACNAS, etc.) and their affiliated meetings.
- Apply for grants that support increasing diversity, such as NSF ADVANCE.
- Establish outreach and recruiting relationships with local and regional high schools with high proportions of under-represented and/or under-served students.
- Develop college-wide policies, infrastructure, and support (staff and funding) for actively recruiting graduate students.
- Pursue a systematic approach to recruiting and supporting students from the GEM program, including funding support for the full period of study (MS: 2 years, PhD: 4 years) in their chosen graduate program.
- Continue to recruit students for summer opportunities and other research internship periods through the University of Iowa SROP and LSAMP programs, utilizing support from the graduate college.
- Establish pathways to recruit and support first-generation undergraduate and graduate STEM students (COE and university-wide) in research activities.
- Establish partnerships with local undergraduate-serving institutions (e.g., community colleges) and historically Black and Hispanic-serving colleges and universities.
- Leverage the university's *Path to Distinction Program* and "Faculty Search Committee Practices to Advance Equity" document to develop college-specific policies and procedures for faculty searches.
- Develop policies and procedures that hold search and graduate committees accountable for the diversity of applicant and short-list pools, as compared to availability pools.

Indicators of Success

- Increased financial resources available to support DEI initiatives and recruiting.
- Applicant pools and short list pools of searches reflect demographics of appropriately identified availability pools.
- Demographic metrics of faculty, staff, and students at or above ASEE averages.
- Increased diversity of leadership populations.

Accountable Parties: COE Leadership Team, DEOs, Engineering DEI Council (including the Data Analysis sub-committee), COE Communications Team, Directors of Graduate Studies, Graduate Coordinators, Graduate Committees, Directors of Research Centers and Institutes, Faculty and Staff Search Committees

Commitment to Equity, Implicit Bias, and Inclusion Training

The emphasis of diversity training is often on cultural difference and respecting all perspectives. While laudable, we believe that equity will not be achieved until we address historical and institutional inequality. To address the myriad ways that certain people are marginalized (i.e., based on social identities such as race, gender, disability, religion, class, sexual orientation, etc.), each of us must understand our own identities, learn, grow, and challenge our own perceptions and biases. Thus, we are striving for leadership from every level, where we all lead on equity and inclusion in ways that reflect our identities, abilities, and capacity. We will continue to develop, implement, and promote educational opportunities for community members to meaningfully engage with these issues.

Accountability and Assessment

Overall, accountability for implementing this plan is distributed across many members of the University of Iowa College of Engineering community. As such, accountable groups or individuals have been indicated above for each Critical Task. We believe that collaborating and sharing responsibility will increase our likelihood of success and increase broad “buy-in” from the community. Progress on each Critical Task will be continuously monitored by accountable parties as appropriate (as indicated above for each Critical Task). Overall, progress on the COE Strategic Plan (including the DEI Plan) will be evaluated continuously by the COE Leadership Team (Dean and Associate Deans), and the Engineering DEI Council Leadership Team (Co-Chairs and Sub-Committee Leads). In addition, the “Action Plan” for each Department, Center, and Institute will be reviewed annually by the COE Leadership Team. Moreover, the Engineering Administrative Council (EAC) DEI Leadership Summit, planned for each spring semester starting in 2021, will provide ongoing opportunities for ideas to be exchanged within the college and for COE progress to be reviewed by an external expert on DEI in Higher Education. Their advisement and feedback will enable continuous improvement and refinement of priorities, goals, and strategies.