

# School of Engineering DIAP

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BROWN

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The School of Engineering has spent 2016 in a thoughtful and wide-ranging dialog to create this document - our *Diversity and Inclusion Action Plan* (DIAP). We engaged with faculty, undergraduate students, graduate students, staff, other academic departments, senior administration and alumni to craft the following impactful and targeted plan, with actionable and achievable short-term and long-term milestones. All questions and feedback to this plan should be directed to Dean Larry Larson at [larry\\_larson@brown.edu](mailto:larry_larson@brown.edu).

## I. Overall Diversity and Inclusion Landscape in Engineering

Diversity and inclusion are vital components to our mission of advancing learning and scholarship in engineering. Engineering at Brown attracts a diverse cohort of undergraduate students, and we know from experience that all students — including women, students of color, first-generation students — can master science, math, and engineering topics. However, like other STEM fields, engineering still bears signs from a societal legacy of exclusion, evidenced in the lower percentages of women and minorities among undergraduate and graduate students, and the very low percentages in the professoriate. We strive to broaden participation at all levels in the School, to support historically underrepresented groups<sup>1</sup> (HUGs) in ways that they express as most meaningful, and to educate all students to address pressing societal challenges in a collaborative scholarly environment comprising multiple ideas, identities, and points of view.

Engineering is inherently a creative and collaborative discipline in the sense that teams comprising a range of skills and methods are required to invent, design, build, and test the complex engineered systems needed in our technological society. The School's historical strengths emphasize a deep science-based understanding of fundamental principles and are coupled to a growing emphasis on areas of high technological impact. These areas are amenable to an approach that places foundational knowledge in a social context and is accessible to all students, including those historically underrepresented, in the School. Our goal and commitment is that *all* students can engage with the engineering discipline, and those students who choose to major in engineering will graduate well-prepared to enter the profession or progress to the next stage of educational attainment.

The School of Engineering has spent the first half of 2016 in a thoughtful and wide-ranging planning exercise to create this document - our *Diversity and Inclusion Action Plan* (DIAP). We engaged with faculty, undergraduate students, graduate students, staff, other academic departments, senior administration and alums to craft an impactful and targeted plan with actionable and achievable short-term and long-term milestones. This extensive collaborative effort is summarized in Appendix I, which lists all the meetings held within our community over this period to develop the plan.

At the same time, we feel that this DIAP represents just the beginning of a process, rather than an end goal. We expect that the DIAP will be constantly updated and refined in the years ahead, with ever-more ambitious goals. We look forward to continued outreach to all the members of our community - faculty, undergraduate students, graduate students, staff, other departments, senior administration and alums - as we continue to build a more diverse and inclusive community.

Specifically, in the coming year, and continuing to the future, we will institute a very thoughtful process of *dialog* and *assessment*. The dialog will take the form of regular town-hall meetings and the convening of a Student Advisory Panel, which together will provide a strong feedback within the School on issues of diversity and inclusion. The assessment will take the form of community climate surveys - hopefully done

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<sup>1</sup> Within the sciences at Brown, historically underrepresented groups include women, Hispanic or Latinx, American Indian or Alaska Native, Black or African American, or Native Hawaiian or Other Pacific Islander.

in coordination with campus-wide survey. We will also continue to survey staff and the alumni community on these issues.

The School of Engineering (SoE) approach to the Diversity and Inclusion Action Plan (DIAP) included a consideration of the following components, which broadly represent the engineering experience at Brown.

**Faculty:** Approaches to attracting, recruiting, hiring, and sustaining HUG faculty

**Students:** Approaches to recruiting, supporting, and enabling HUG students in the concentrations and graduate programs

**Curriculum:** Approaches to incorporate diversity as relevant to the engineering curriculum

**Programming:** Diversity in programming for all populations in engineering

**Professional Development:** Development and training for staff as well as education for faculty and students on diversity and inclusion issues

The following narrative describes areas of impact and engagement and recommendations for near-term, medium-term and long-term activities to support diversity and inclusion in the School of Engineering.

## II. FACULTY

Our goal is to build a faculty in the School of Engineering that represents the diversity of our society, and is a model of inclusiveness.

Process in Developing the Plan: Many meetings were held with faculty, students and student groups throughout the semester (see Appendix I) and feedback was specifically solicited on issues of faculty diversity and hiring. Students in historically underrepresented communities are anxious to “see themselves” in the faculty at Brown, and are highly supportive of efforts to diversify the faculty. Students also expressed a desire for more transparency on the faculty recruiting process.

We met with Professor of Engineering and Associate Dean of the Faculty Christopher Rose to discuss optimum faculty hiring strategies in the SoE. We invited Dean of the Faculty Kevin McLaughlin to an engineering faculty meeting to address the Target of Opportunity program and diversity hiring strategies. We engaged with the Initiative to Maximize Student Development (IMSD) Program at Brown as it works to diversify into the Physical Sciences. All of these meetings and discussions led to the recommendations for action, which appear below.

Faculty Landscape at Brown: The landscape for HUGs in the engineering professoriat is a well-known challenge. Nationwide, roughly 8-12% of the tenure-track engineering faculty at research universities are women and 3-6% are from underrepresented minority (URM) groups.<sup>2</sup> Within the Brown SoE, roughly 11% of the tenure-track faculty are women, and roughly 4% are from URM groups. Clearly, we have an important challenge to improve these numbers in the years ahead.

Specific Recommendations: Based on our process and the landscape, we developed a series of strategies and specific goals for building a diverse and inclusive faculty in the SoE.

Extensive discussions with Dean Rose emphasize the importance of a strongly supportive community for the scholar being considered as part of a successful hiring strategy. This may take the form of a “cluster hire” in a targeted area, or more generally we must pay special attention to ensuring a rich network of collaboration and support as part of the hiring process for candidates from historically underrepresented communities.

We also embrace the importance of *networking* in creating a great pool of candidates from underrepresented groups, and one of the best ways to create this network is through a targeted and ambitious outreach to invite leading scholars to Brown to give research seminars. These seminars also inspire the students and help create a more inclusive culture on the campus. The School of Engineering has been the effective home of the Thinking Out Loud series during the last two years and SoE will work with Dean Rose in coming years to continue to invite top scholars from historically underrepresented

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<sup>2</sup> *A National Analysis of Minorities in Science and Engineering Faculties at Research Universities*, Nelson and Brammer, 2010.

groups to the campus. SoE faculty will also work to increase the number of seminars given by HUG members -- with the express intention of developing some of these visitors into HUG faculty candidates. Our goal is to have at least two such seminars per group per year.

Students have requested greater transparency in the faculty hiring process. We will hold periodic “town-hall” meetings in engineering --- at least once per semester --- where, among other things, our faculty hiring plans for the year will be shared with the student body as a whole.

Our goal as a School is to grow by roughly 10 faculty over the next five years. Also accounting for replacements due to retirements and retention, we expect to make roughly a dozen faculty hires in the next five years. So, this is a great opportunity for diversification, and our (ambitious) goal here is that at least 50% of our offers will (if accepted and the candidate comes to Brown) diversify the faculty. Given the wide range of areas we plan to hire in (Chemical and Environmental, Fluids, Solids, Electrical and Computer, Materials, Biomedical) and the diversity of campus initiatives that we can partner with to potentially help to support this hiring (BIBS, IBES, Big Data) we have to be opportunistic and flexible in achieving this goal; there is no “one-size-fits-all” approach here.

In addition, we recognize that a traditional search structure tends to favor majority candidates simply owing to larger numbers, which translates into a higher probability of "fit" with a pre-defined narrow search. Thus, we hope to build searches around the HUG candidates we identify through outreach and networking, as opposed to attempt to find already scarce HUG candidates to fill pre-existing search criteria. Of particular note, HUG and women scholars tend to be broader in their scholarly interests, and this quality may lend itself to interdisciplinary problem solving, help bridge local communities and also provide a wider range of collaborators for HUG/women faculty, thereby mitigating a potential source of technical isolation.

The Target of Opportunity program has proven effective in recruiting outstanding faculty from historically underrepresented groups in the School of Engineering, and we plan to continue to pursue this approach wherever possible. In this case we will use our rich network --- developed using some of the strategies described above --- to identify outstanding candidates. We will work very closely with Dean Rose here, and he has already been extremely helpful in these early stages of the Plan. In fact, his efforts somewhat pre-date the formal announcement of the DIAP and have already yielded results in other departments, so we are optimistic about the likely outcome. Regular searches will include active outreach to leading scholars to identify diverse candidates and the scope of the search will be defined as broadly as possible as described previously.

The Hibbitt postdoctoral fellows program in the SoE is a great vehicle for moving forward over the next five years an agenda of developing new HUG faculty members through support of postdoctoral scholars. We note that it has already had an impact here, as two of the three inaugural Hibbitt Fellows are outstanding women scholars. Considerations of diversifying the faculty will be weighted heavily in

evaluating applicants for Hibbitt Fellows. We also intend to actively solicit applicants for the Brown Presidential Diversity Postdoctoral Fellowship, and will guide at least one promising applicant into this program every year.

Coordination with campus-wide plan: Our goal of new hires that diversify the Engineering faculty is consonant on a percentage basis with the campus-wide goal of increasing HUG faculty by 60. Our efforts with Dean Rose leverage the cluster hiring and Target of Opportunity strategies being implemented at the campus level.

Effectiveness: Key metrics of success are the numbers of women and URM faculty hired and promoted; the numbers of women and URM postdoctoral scholars mentored and successfully placed; the numbers of women and URM faculty in the recruiting pools; increased satisfaction and success reported by women and URM faculty and postdocs in networking and mentoring.

### III. STUDENTS

We discuss our approaches to recruiting, supporting, and enabling HUG students in the concentrations and graduate programs. We are committed to making our students feel welcomed, respected, valued, and supported within our school.

Process: Many meetings were held with students and student groups throughout the semester (see Appendix I) and feedback was specifically solicited on issues of diversity and inclusiveness. Following the student forum organized by the Group Independent Study Project (GISP) on the engineering curriculum, three students - Yasmine Hassan '17, Eshe Hawash '17, and Israel Carrete '17 - volunteered to partner with School leaders to help refine and critique the draft plan. A separate session with the graduate community hosted by the Graduate Council and a focus group with HUG graduate students was also held. All students received the draft plan for further comment and suggestions. Given the time constraints - the draft plan was emailed to all SoE students on 5/10/2016 and input was accepted until 5/27/2016 - student feedback to the draft plan was understandably limited and we look forward to further engagement with students in the Fall.

Student Diversity Landscape: Increasing the numbers of HUGs in engineering in academia is a well-known challenge. Nationwide, roughly 25% of BS recipients in engineering are women and roughly 13% are from underrepresented minority (URM) groups. For PhD recipients, the figures are 25% women and 5% URM.<sup>3</sup> Within the Brown SoE, ScB/AB recipients are 35% women and 13% URM; PhD recipients are 20% women and 2% URM. In other words, we are equal to or greater than the national averages for undergraduates, but not equal to the national averages for graduate students. Most of the engineering graduate programs enroll a high percentage of international students, which may be a valuable aspect of diversity in its own right, but does not address the HUG challenge.

The School of Engineering strongly financially supports undergraduate groups that build community and networks for HUGs: National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), and Society of Women Engineers (SWE). Other elements that support all undergraduates (and may be especially important for HUGs) include: group-based learning through courses and capstone experiences; interdisciplinary interactions (no departmental boundaries); research opportunities in more than 40 laboratories with multiple collaborations and thrusts; messaging about students' success stories as part of SoE web site, magazines, and other communications; and the annual SoE Job Fair and Job Board supporting active recruitment of students by employers. At the graduate level, we intensively recruit the small numbers of HUG students in the applicant pool.

Recommendations: Several dimensions of the institutional experience are important to the social climate as perceived by students, including a friendly and collaborative student culture, a high quality of faculty-student interactions, appreciation of student creativity and personal expression, and a sense of

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<sup>3</sup> *What the Data Tell Us about the Pipeline for, and Degree Attainment of, Engineering Graduate Students from Underrepresented Minority Groups*, Garrick Louis, 2011.

shared identity or mission. Our recommendations relate to advising, building community within SoE, and outreach beyond SoE and beyond Brown.

The process of connecting undergraduate HUG students to the School should begin before the admission offer is accepted. As part of the outreach effort, engineering will collaborate with admissions to enable annual spring calling to HUG admitted students to encourage their matriculation at Brown and connect them with the support network, which we will then work to activate in the fall when the students arrive. We will encourage more Engineering faculty to gain special advising expertise, so that we develop a larger set of engineering faculty trained to be more effective HUG advisers and ensure that all incoming students can be paired with well-prepared advisers. An advisee feedback mechanism will be developed, and used by the SoE in collaboration with the offices of the DoC and DoF to identify and recognize faculty who best mentor and advise HUG students. We will seek to increase the number of Engineering students participating as Meiklejohn peer advisers, and ensure that they are paired with Engineering faculty --- a key request heard from all students.

The School will constitute a Student Advisory Panel that will meet at least twice per semester with the Deans to facilitate ongoing dialog among the faculty and students. It is expected that diversity and inclusion will be one of several major areas of emphasis for this panel. Its membership will include the student groups: NSBE, SHPE, SWE, DUG as well as the graduate student community. Other students may also participate. The charge for this panel is under discussion and may include evaluating the effectiveness of resources available for HUG students, survey data collection, progress of the DIAP, and coordination with Brown's campus-wide efforts.

As these efforts proceed, we will provide resources to enable our HUG student representatives to participate in conferences and activities at other universities. These actions are intended to deepen ties with other organizations that support HUGs in engineering.

At the graduate level, we will expand our participation with the Initiative to Maximize Student Development (IMSD) program and strive to ensure that its workshops and training modules are leveraged by the engineering community. Responding to Engineering graduate student sentiment, we will seek to expand the IMSD "Demystifying the PhD" module as part of orientation week, making it a vehicle for faculty presenters to share personal histories and challenging points in their experiences. We will also share information periodically through the first year to help new graduate students gain awareness of student-recommended resources such as the Brown Center for Students of Color, the Brown Chapter of the Society for the Advancement of Chicano and Native Americans in Science (SACNAS), and the Graduate Students of Color Collective.

Looking into the future, while we are doing well with international diversity, our long term goal is to diversify the graduate student body to include a balanced ratio of domestic students, with those students having a gender and URM balance similar to what is seen at the undergraduate level. We will work on this goal through targeted outreach, partnership with the GEM program, and Presidential Fellowships.



Coordination with campus-wide plan: Programs that promote inclusiveness and accessibility will promote achievement among all students, especially students from less-advantaged backgrounds. The programs proposed and highlighted above will be closely coordinated with the Dean of the College and Dean of the Graduate School. We will engage annually with the Office of Diversity and Inclusion to ask their assistance in coordination to engage with other units beyond engineering to identify and engage university-level programming (such as undergraduate admissions outreach and graduate orientations,) to include and address engineering populations.

Effectiveness: The School of Engineering will continue to collect data for HUG enrollments each year and the number of HUG applicants in the undergraduate and graduate student pools. Other metrics of success include increased positive reporting on inclusivity from HUG students, desirable job placement in technically challenging fields, internship placement, and increased HUG student visibility in academic “spotlight” activities such as commencement speaker, web page, alumni magazine, and academic performance awards.

#### IV. CURRICULUM

Process: Among the meetings on DIAP this semester (see Appendix I), a particular effort was made to absorb recommendations from the GISP being advised by Prof. Beresford. Many of this group's ideas relate to inclusiveness of the curriculum and GISP members include the leader of NSBE and the co-leaders of SWE. Following the student forum organized by the GISP, a group of three students - Yasmine Hassan '17, Eshe Hawash '17, and Israel Carrete '17 - volunteered to partner with School leaders in several DIAP workshops to help refine and critique the draft plan.

In another thread of development, Prof. Blume in the DoF along with Prof. Richards and Prof. Poland in STS convened a meeting of all the physical science department chairs to discuss a collaborative approach to developing courses or course modules that address diversity and inclusion in the sciences and engineering.

Prof. Beresford and Prof. Briant met with Prof. Larry Bucciarelli of MIT and Prof. David Drew of Claremont Graduate University, experts who are championing "liberal studies in engineering" and broadening participation in STEM. The Assoc. Dean for Academic Programs and the Director of Undergraduate Studies compiled recommendations from all these and other sources, and led discussion with the entire faculty of the School.

Landscape: Students and faculty in Engineering generally seem in agreement that explicit diversity initiatives may not be necessary or relevant within the course material itself, which is largely a highly formalized and even standardized math- and science-based treatment of complex technological systems and knowledge. Although there is some opportunity for incorporating discipline-specific societal-impact issues into courses, faculty express concerns about their lack of expertise and preparation to wade into controversial social-science and humanities topics outside of their technical specialties. An explicit diversity course *requirement* was not viewed favorably by the students.

A significant access and inclusion issue arises in how to address the academic needs of students with widely differing backgrounds and levels of preparation. Some students express a keen sense of being on an uneven playing field when they arrive at the School, among peers who seem to have a much more thorough preparation in calculus, physics, or other subjects. Students also feel strongly that the curriculum should promote their inclusion in the profession of engineering after graduation from Brown. Hands-on or skills-based components of courses aid with that aspect of inclusiveness, but may be emphasized less than theory-based components in many of our courses.

Recommendations: Regarding explicit social-impact content in courses, we will move forward in collaboration with STS and with other science departments. We will list and publicize existing STS courses that are helpful to diversity goals, such as Gender and Science, Science and Social Controversy,

and Neuroethics. We will solicit from our faculty suggestions for topics that are suitable for collaborative efforts with STS, ideally leading to curated course materials and possibly elective co-taught courses. If DoF funding becomes available, we will seek to embed into the School postdoctoral or visiting scholars with specific expertise in social issues relating to engineering, and have them teach and mentor in those areas.

Regarding inclusiveness and accessibility of the curriculum (and its effectiveness in promoting inclusion in the profession), we will take actions to increase flexibility in the Engineering core and concentrations, forge deeper connections between theory in the classrooms and practice in the labs and workshops, and create more opportunities for peer-to-peer learning. This increased flexibility and support was especially mentioned by HUG and first-generation students as an enabler for their improved access to our curriculum. Further details are listed in the Summary Table. These recommendations constitute the curriculum “pillar” of the GISP plan of action developed this semester. To capture this level of student involvement in curricular evaluation on an ongoing basis, the School will constitute a Student Advisory Panel that will meet at least once per semester with the Deans to facilitate dialog among the faculty and students aimed at effective curricular change (among other goals).

Coordination with campus-wide plan: By helping our students find existing courses that deal with questions of diversity and inclusion in STEM, and partnering with STS faculty, we will begin a process that eventually will result in some new content and/or co-teaching by Engineering faculty relating to social impact of the discipline. This may be in the form of lecture “modules” that are added to core courses, or it may be an entirely new elective course or courses. Inclusiveness and accessibility of the Engineering curriculum will promote achievement among all students, especially students from less-advantaged backgrounds. Expanded UTRA opportunities will be tapped to bring more students into development for GISPs or to the redesign of engineering core and concentration courses to promote hands-on and project-based learning.

Effectiveness: The Engineering Executive Committee will annually assess progress to date, relative to the recommendations established jointly by the faculty and students. The Student Advisory Panel will have a charge to help provide feedback about the student experience and perceptions of the changes made. Metrics indicating positive change will include: increased student satisfaction regarding curriculum flexibility and opportunities for hands-on learning; increased number of Engineering faculty presenting STS-related material in courses or co-teaching with STS; course “modules” dealing with diversity issues in STEM fields. .

## V. PROGRAMMING

This section describes approaches to creating and enhancing diversity in programming for all populations in engineering. For this plan we consider programming to be: non-curricular activities of school-wide and student co-curricular groups; led by student, faculty, or administrative offices, primarily for the audience of students; and with the participation of faculty, staff, and administration.

Process for developing diverse programming: Focus groups and sessions with inclusive groups across all student segments have been underway since February 2016. We have begun a review of the existing school-wide programming of annual recurring events, such as advising days, Engineering career fair, career development activities, special talks, standing lectures, workshops, and community-building programming. We have also begun to engage existing student co-curricular groups to ask what role they can and would like to play in peer support for diversity and inclusion.

Programming landscape: Co-curricular groups represent the largest portion of activity, programming and resources in Engineering. There are currently 19 student-led co-curricular groups, each of which is supported by funding from Engineering and each advised by Engineering faculty. All programming planning considers mentoring beyond academics (life and career), networking at Brown and beyond, and communicating the Engineering mission for diversity and inclusion.

Recommendations: Since we have found enthusiasm from our National Society of Black Engineers, Society of Hispanic Professional Engineers, and Society of Women Engineers to play a greater and more established role in diversity and inclusion programming, we will engage with student leaders to include this advisory and collaborative role in programming in their group description for the engineering website and in other public listings. We will discuss in more detail the annual student programs and activities being planned, what audiences are being served with these activities, any gaps that may exist, and what additional sources of funding can be identified. We will also consider whether other existing programs have scope for greater impact, such as broadening the reach of the Engineering Speaker series (Dourdeville Lecture, Thinking out Loud), and evaluating the adequacy and inclusiveness of existing co-curricular groups, non-academic advising, and career development activities. Going forward, annual surveys will be implemented to gather information on what is working well in programming activities, what is not working well, and where there are gaps.

A diverse and inclusive group of undergrad and graduate student leaders will be formed into a Student Advisory Panel that will meet with school leadership at least once per semester and participate in assessing programming and DIAP impact (among other things). The leadership of the existing co-curricular groups could be engaged in this advisory panel, as well as leadership in the graduate council. In collaboration with this panel, we will review all planned events with regard to the intended purpose of the programming, whether it is inclusive of diverse audiences and known student needs, and with whom we may be able to collaborate based on the specific programming (such as Dean of the College, CareerLAB, Admissions, Graduate School, Swearer, Sheridan Center, Libraries.)

If additional resources can be identified in the future, we will seek to develop new additional activities. These may include additional engineering or physical sciences non-academic advising; increased funding for student groups with diversity and inclusion activities; new peer mentoring and support structures such as engineering or concentration-specific study breaks; employer outreach to identify corporate partners with significant support for diversity and inclusion in engineering fields; and establishing a slate of mentoring and networking activities, internships, and recruiting opportunities

Coordination with the campus-wide plan: We will engage annually with the Office of Diversity and Inclusion to ask their assistance in coordination with the campus-level plan, and to specifically engage with other units beyond engineering to identify and engage university-level programming to include and address engineering populations. Potential engagements could include the following units and programs outside of Engineering: BrownConnect and Undergraduate Teaching and Research Awards (UTRAs), Dean of the College, CareerLAB, Swearer, Sheridan Center, Admissions, Graduate School, Libraries, Physics, Chemistry, Applied Math, Computer Science.

Effectiveness: We will establish what programming is working well in support of diversity and inclusion in Engineering through focus groups and planning sessions with stakeholders. We will engage with engineering professionals in industry and select engineering programs to gather information on best practices and high impact activities, and compare to our programming. The Engineering Executive Committee will assess programming at year-end and as part of planning for the next year's programming in the Fall. The Associate Dean for Programs and Planning will provide an analysis of co-curricular group funding and identify how increases in funding have had impact.

## VI. PROFESSIONAL DEVELOPMENT

This area includes development and training for staff as well as education for faculty and students on diversity and inclusion issues. Most of the professional development issues for students are discussed in the “Students” and “Programming” sections.

The SoE provides a welcoming and open workplace environment for staff and their constituents. We will continually strive towards a climate of inclusion where all employees act professionally toward others at work who do not share their values or beliefs (cultural or personal); treat their colleagues fairly and respectfully; foster a trusting relationship and respect others’ experiences and traditions. We will establish community expectations that respect boundaries and allow for the recognition and understanding that there are different communication styles (verbal and nonverbal) and how our own communication style could have a negative or positive impact on others.

Process: The management team will develop a diversity and inclusion training process for staff. The EEC will develop a training strategy for faculty.

For Staff: The professional development vision is to educate staff about diversity and inclusion issues and develop best practices to promote a more diverse and inclusive community. The management team will assess the current diversity and inclusion climate - identify what we are doing well and what we need to work on. During the summer the team will conduct a staff survey and/or assemble a focus group. The team will develop custom staff and development training activities in coordination with Brown Learning and Professional Development. The trainings will enable staff to further their skills and awareness to foster a diverse and inclusive work environment.

In order to ensure that the process is inclusive, the team will coordinate with LearningPoint and Brown’s Learning and Professional Development office to identify and plan for yearly diversity training for all staff. The team will have staff that participate in diversity training share their learning experience and explain how they would apply diversity to their daily work and with the rest of their teams for a broader impact. Workshops can be taken throughout the year through the Center for Staff Learning & Professional Development either singularly or as an in-house training opportunity in Engineering. Presently there is a choice of ~10 trainings available throughout the year.

For Faculty: We are planning for faculty development activities in issues of diversity in the Fall of 2016 and into the future. One suggested theme, which has been shared with the faculty, has been a set of invited lunch-time talks by distinguished faculty who have done work in STEM education issues in the area of Diversity and Inclusion. These seminars could be co-hosted by other STEM departments, and we have begun these discussions.

Landscape: The current SoE staff has a nearly 50-50 split by gender. However, within job categories there are often gender differences, and our goal will be to reduce those differences as opportunities

present themselves through hiring over the next 3-8 years. The faculty landscape was discussed in the “Faculty” section. In both cases, appropriate professional development opportunities can foster an improved diversity and inclusion landscape in the School.

Recommendations: The recommended specific achievable goals for 2016-2017 are to

- Assess the current diversity and inclusion climate. The management team will assess the current climate by conducting a staff survey and develop best practices and milestones which can be measured.
- Based on the climate assessment the team will develop a custom staff training and development program during the summer. The team will reach out to Judy Nabb, Associate Director of Learning and Professional Development for custom in-house training opportunities. Contingent upon the training, a fee may be incurred for the courses (so resources may be required.) The team will measure training effectiveness both by the number of staff who participate in trainings and by evaluating the environment to periodically assess if we are maintaining a welcoming and inclusive workplace environment.
- Create faculty development activities that provide meaningful learning and dialogues for faculty on issues of diversity and inclusion.

During AY 2017-2019, we will:

- Prioritize, monitor and measure staff awareness of cultural differences, respect in the workplace, and commitment to value differences through continual communication and monthly feedback from staff and their constituents.
- New employees will be paired with a SoE staff mentor to foster professional development and create an inclusive, inviting, open and welcoming work environment.
- We will continue to prioritize and measure staff awareness of respecting cultural differences in the workplace by conducting annual surveys targeting the assessment of improvements in areas of opportunity that were identified by the management team, as well as assessing the mentoring program for efficacy and adjust as necessary.
- We will explicitly consider what changes we can make now in our physical environment that will help carry our message of inclusivity. As an example, there are currently no gender neutral bathrooms in Barus and Holley for a guest or visitor, which could be viewed as unwelcoming.

Coordination with campus-wide plan: The SoE human resource management team will work with Brown Human Resources when recruiting staff. Work with our Human Resource Generalist to include 'About Us' language that talks genuinely about diversity and inclusion in our position advertisements. Advertise our positions with targeted outlets/media to reach diverse candidates. The team will reach out to diverse candidates through networking. We will develop a diverse interview team so candidates will see diversity from their first engagement. The two senior leadership members will work to improve the departmental climate through inclusive practices. Encourage management to begin the three year Leadership

Certification Program (goals for FY2017). The team will look at how we express inclusion in our campus environment.

Effectiveness: The management team will measure the professional development plan for effectiveness by the number of staff attending trainings and providing feedback to their Managers. The staff member discussing what they have learned and formulating ideas on how to implement it into their work. Staff and managers will set follow up periodic discussions to assess if practices, and activities are followed through and how effective the new practices are. Managers will discuss the results from their one-on-one with staff during a Managers meeting. Staff will share their learning experience with their colleagues during staff meetings.



## VII. SUMMARY TABLE OF RECOMMENDATIONS

The following Table depicts the major initiatives described in the text above, along with a rough timeline for their proposed implementation. We would like to mention that the details of the plan require additional effort on the part of staff, students and faculty. In some cases, this can be accomplished through redirection of existing resources, but in other cases new resources may be needed.

	<b>Near Term 2016-2017</b>	<b>Medium Term (2-3 years)</b>	<b>Long Term (3-5 years)</b>
<b>Faculty</b>	Approximately 50% of faculty offers add diversity	Approximately 50% of faculty offers add diversity	Approximately 50% of faculty offers add diversity
	Plan HUG faculty seminars each semester	Host HUG faculty seminars each semester	Host HUG faculty seminars each semester
	Outreach and planning for at least 1 Presidential Diversity Postdoc nomination per year	At least 1 Presidential Diversity Postdoc nomination per year	At least 1 Presidential Diversity Postdoc nomination per year
<b>Students</b>	Organize phone outreach to admitted HUG students welcome, answer questions, and invite to join peer groups	Annual phone outreach to admitted HUG students welcome, answer questions, and invite to join peer groups	Annual phone outreach to admitted HUG students welcome, answer questions, and invite to join peer groups
	Develop HUG advising expertise for faculty	Develop HUG advising expertise for faculty	Develop HUG advising expertise for faculty
	Outreach & planning to expand participation with IMSD program	Expand participation with IMSD program	Expand participation with IMSD program
		Plan and execute expanded orientation channel for first-year grad students	Expanded orientation channel for first-year grad students
	Convene Student Advisory Panel	Convene Student Advisory Panel	Convene Student Advisory Panel
	Plan and pilot customized training for Engineering Meiklejohns and recruit more	Host customized training for Engineering Meiklejohns and recruit more	Host customized training for Engineering Meiklejohns and recruit more
<b>Curriculum</b>	List and publicize STS courses helpful to diversity goals	List and publicize STS courses helpful to diversity goals	List and publicize STS courses helpful to diversity goals
		Curate course materials with STS; one core course to incorporate modules on diversity and inclusion topics	Curate course materials with STS; 2 core courses to incorporate modules on diversity

		modules	and inclusion topics
	Formulate guidelines for core course options and concentration substitutions	Faculty workshops on core course lab coordination and problem-solving sections	Engage 2 or more UTRAs on core lab renewal
	Clarify web presentation of concentration options	Pilot undergraduate TAs in 1 - 2 courses	Evaluate undergraduate TA program proposal
	Plan and hold “Concentration Welcome” event to build connections between sophomores to juniors and seniors.	Host “Concentration Welcome” event	Host “Concentration Welcome” event
	Plan and hold “Concentration Graduation” event	“Concentration Graduation” event	“Concentration Graduation” event
			Engaged Scholars pathways in all concentrations
<b>Programming</b>	Formalize programmatic guidance in mission of NSBE, SWE, SHPE	Hold town hall meeting once a semester	Hold town hall meeting once a semester
	Planning and student engagement for diverse and inclusive speakers	Regular speakers highlighting diversity and inclusion	Regular speakers highlighting diversity and inclusion
	Develop proposal for increased student group funding	Increased student group funding if available	Evaluation of increased student group funding if available
	Evaluate co-curricular activities for inclusiveness	Collaborate with DOC to create inclusivity training	Evaluate inclusivity training
<b>Professional Development</b>	Develop and implement a survey to assess the current diversity and inclusion climate in the SoE	Annual Staff survey	Annual staff survey
	Pair new employees with existing employee mentor	Pair new employees with existing employee mentor	Pair new employees with existing employee mentor
	Develop a custom staff training and development program.	Ongoing training will ensure staff have the skills they need to foster a diverse and inclusive work environment.	Ongoing training will ensure staff have the skills they need to foster a diverse and inclusive work

			environment.
	Develop faculty education activities to support a diverse and inclusive environment.	Execute and evaluate faculty education activities to support a diverse and inclusive environment.	Ongoing faculty education activities to support a diverse and inclusive environment.

## **Appendix 1: Engineering DIAP Planning Meetings in 2016**

1/22/2016 – Faculty Retreat – DIAP Kickoff

2/12/2016 – EEC Discussion on DIAP

2/18/2016 – Faculty Meeting – Diversity Plan discussion

2/19/2016 – EEC Discussion on DIAP

2/26/2016 – EEC Discussion on DIAP

3/3/2016 – Faculty Meeting – Diversity Plan Discussion

3/4/2016 – EEC Discussion on DIAP

3/7/2016 – Diversity Action Planning

3/11/2016 – EEC Discussion on DIAP

3/17/2016 – Faculty Meeting – Diversity Plan Discussion with DoF

3/18/2016 – EEC Discussion on DIAP with Group Independent Study Project (GISP) students

4/7/2016 – WISE Lunch Discussion

4/7/2016 – GISP Engineering Student Forum

4/8/2016 – EEC Liza Cariaga Lo – Discussion of DIAP

4/13/2016 – DIAP Workshop with HUG Undergraduate Students

4/13/2016 - Meeting with Physical Sciences chairs and STS to discuss curriculum revisions

4/14/2016 – Faculty Meeting – Discussion of Faculty and Curriculum – Larry and Rod

4/14/2016 – Staff Meeting to discuss DIAP

4/26/2016 – DIAP Leadership Meeting

4/28/2016 – Faculty Meeting – Discussion of Students, Programs and Curriculum – Anubhav, Jennifer and Nancy

4/29/2016 – EEC Meeting – discuss DIAP

4/29/2016 – Grad Student State-of-the-School and Diversity Survey

5/2/2016 – Follow-up Meeting with HUG Undergraduate Students to discuss DIAP draft

5/6/2016 – DIAP Draft Sections due from Larry, Rod, Anubhav, Jennifer and Nancy

5/6/2016 – Grad Student Diversity Focus Group

5/9/2016 - Meet with Graduate Students

5/10/2016 – Distribute Draft DIAP to Faculty

5/12/2016 – Faculty Meeting – Discussion of DIAP Draft

5/12/16 – Engineering Corporate advisory board presentation and best practices discussion

5/19/2016 – Meeting with HUG undergraduate students to discuss DIAP draft

5/19/2016 – discussion with Engineering Alum from IPC

5/20/2016 – EEC Meeting – Discuss DIAP

5/23/2016 – Senior Diversity Luncheon Celebration

5/30/2016 – Submission of DIAP

## Appendix II:

### References

1. Pathways to Diversity and Inclusion: An Action Plan for Brown University, <http://brown.edu/web/documents/diversity/actionplan/diap-full.pdf>
2. David E. Drew, *STEM the tide: reforming science, technology, engineering, and math education in America*, (Johns Hopkins University Press, Baltimore, 2011).
3. Enrica Ruggs and Michelle Hebl, “Diversity, Inclusion, and Cultural Awareness for Classroom and Outreach Education,” in *Apply Research to Practice Resources*, B. Bogue and E. Cady (Ed.s), downloaded from [www.engr.psu.edu/awe/ARPAbstracts/DiversityInclusion/ARP\\_DiversityInclusionCulturalAwareness\\_Overview.pdf](http://www.engr.psu.edu/awe/ARPAbstracts/DiversityInclusion/ARP_DiversityInclusionCulturalAwareness_Overview.pdf)