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WASHINGTON UNIVERSITY MCKELVEY SCHOOL OF ENGINEERING  
**STRATEGIC PLAN TO ACHIEVE LEADERSHIP THROUGH EXCELLENCE**

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CULTURE, OPERATIONS & PARTNERSHIPS

# Diversity & Inclusion



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### Executive Summary

Enhancing diversity and increasing inclusion are recognized priorities for WashU and for SEAS. SEAS faces unique opportunities and challenges in enhancing diversity and promoting inclusion, as do most areas of Science, Technology, Engineering, and Mathematics (STEM). STEM fields typically have low percentages of women and traditionally underrepresented minorities (URMs) (including those who identify as American Indian or Alaska Native, black, Hispanic or Latino, Native Hawaiian or other Pacific Islander). Diversity of gender, color, and background are important because they lead to different ideas and new discoveries. This initiative outlines our mission to recruit, support, and educate a diverse population of undergraduate and graduate students, faculty, and staff within SEAS and create an inclusive environment to learn, create, discover, and grow as individuals and a community. The success of the proposed initiative is predicated on adopting the following recommendations:

**Recruit:** University-wide initiatives for recruiting more diverse undergraduate students will continue, and SEAS should support and participate in these efforts. In addition, recruitment of a more diverse pool of graduate students and faculty must be a strategic focus of SEAS. For graduate students, we recommend that a centralized graduate recruitment office be created. A dedicated recruitment office would have the time and resources to target national meetings for women and URMs and develop relationships with targeted feeder universities. For faculty members, search committees should utilize existing resources available for finding and recruiting diverse candidates before the search begins. As SEAS plans to significantly increase its number of faculty over the next five years, this is a golden opportunity to concurrently increase faculty diversity.

**Support:** As the population of students, faculty, and staff becomes more diverse, there must be support to assure their success. Although support is necessary at all levels, we believe SEAS should focus on support for undergraduate students. We recommend that a staff member in Engineering Student Services is dedicated to advising URM, first-generation, and low-income students and is trained to address their specific needs and direct them to additional resources if necessary. We also propose starting a mentor program to pair first-year students with juniors or seniors from similar backgrounds.

**Educate:** We use the word “educate” not in the sense of educating our students to make significant contributions in engineering fields, but to educate our SEAS community on the best and most productive ways to interact with a diverse population of individuals and deploy methods that enhance inclusion. WU has programming for first-year undergraduate students focused on diversity and inclusion, but does not yet have broad programming for graduate students, faculty, and staff. We propose that yearly diversity and inclusion training is required for graduate students, faculty, and staff.

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## **Overview**

Enhancing diversity and increasing inclusion are recognized priorities for WashU. As stated by Chancellor Wrighton, “Diversity strengthens our sense of community, and is vital to our knowledge creation, problem solving and productivity — all of which are essential to our mission as a world-class university. Enhancing our diversity, while making WashU a more inclusive place, is not an option. It is an imperative. And, we know that we have work to do. This is one of our deepest values and highest priorities.”<sup>1</sup>

Diversity and inclusion are also priorities for SEAS. SEAS faces unique opportunities and challenges in enhancing diversity and promoting inclusion, as do most areas of Science, Technology, Engineering, and Mathematics (STEM). STEM fields typically have low percentages of women and traditionally underrepresented minorities (URMs), including those who identify as American Indian or Alaska Native, black, Hispanic or Latino, Native Hawaiian or other Pacific Islander. Diversity of gender, color, and background are important because they lead to different ideas and new discoveries. We learn from those who are different from us. We want all constituents of our population to be represented and feel included at SEAS. This whitepaper outlines our mission to recruit, support, and educate a diverse population of undergraduate and graduate students, faculty, and staff within SEAS and create an inclusive environment to learn, create, discover, and grow as individuals and a community.

## **Background**

In March 2015, Provost Holden Thorp appointed the Diversity & Inclusion Steering Committee to create a university-wide, two-year action plan. The Steering Committee’s report was published Aug. 14, 2015<sup>2</sup> and includes the motivation for, recent progress of, and recommendations to improve diversity and inclusion at WashU. The report provides a list of reasons why diversity and inclusion is and will continue to be a university-wide priority: “First, we are an institution that promotes the highest level of principles and ethics, and thus we must welcome difference into our community and work hard to ensure that every individual is equally valued, respected, and supported. Second, a consensus among scholars and researchers has emerged in a wide range of disciplines:

Diversity and inclusion on a university campus are believed to improve academic skills, leadership potential, innovative thinking, student health outcomes, patient care, and legitimacy in the local and national communities. Promoting diversity and inclusion, in short, will better position WashU to succeed in its teaching, research, patient care, and service missions. Finally, the demographics of our community and nation are rapidly changing. In the next several decades, our population will be far more diverse than ever before in history. This means that we must work toward greater diversity and inclusion in order to partner effectively with our growing multicultural community and to ensure that our students are prepared to succeed in this new and changing environment. Businesses, government agencies, the U.S. military, religious organizations, and countless other institutions across the nation have recognized and embraced diversity and inclusion for all these reasons.”<sup>2</sup>

It is clear that promoting diversity and inclusion will strengthen WashU and SEAS. Although WashU is making advances in this area, SEAS faces additional challenges specific to STEM fields. A summary of the 2016-2017

diversity data for WashU and SEAS is shown in Table 1. SEAS lags behind WashU in the percentage of women and URM in all categories (undergraduate and graduate students, faculty, and staff).

**Table 1.** Diversity data for Washington University’s Danforth Campus (WashU)<sup>3</sup> and the School of Engineering & Applied Science (SEAS). Percentages by gender, self-identified race/ethnicity, and low-income (Pell-eligible). Total percentages may be less than 100% due to non-reported data.

	<u>Undergraduate</u>		<u>Graduate</u>		<u>T/TT faculty</u>		<u>Staff</u>	
	WU	SEAS	WU	SEAS	WU	SEAS	WU	SEAS
<b>Gender</b>								
Male	48%	69%	53%	74%	68%	83%	28%	38%
Female	52%	31%	47%	26%	32%	17%	72%	62%
<b>Race/Ethnicity</b>								
White (U.S.)	62%	54%	42%	33%	77%	52%	77%	76%
Asian (U.S.)	22%	16%	7%	7%	14%	42%	7%	10%
Black (U.S.)	8%	8%	6%	3%	6%	3%	16%	10.5%
Hispanic (U.S.)	8%	7%	4%	3%	3%	1%	2%	1.5%
Native Am/ Pacific Islander (U.S.)	1%	1%	1%	1%	0%	0%	1%	0%
International (any ethnicity)	8%	12%	39%	49%	not separated		not separated	
<b>Low-income</b>								
Pell-eligible students	12.7%	9.4%						

The percentages for SEAS are in line with engineering schools nationwide and highlight the challenges for diversity and inclusion in STEM. Table 2 presents a comparison of diversity data from SEAS and U.S. engineering schools<sup>4</sup>. There is little data on diversity of staff members at universities nationwide, but it must be remembered that the entire community, students, staff, and faculty, contribute to the culture and success of the university. There is a decline in the percentages of women and URM from undergraduate students to graduate students to faculty in engineering schools nationwide and in SEAS. As these percentages decline, there is only a small cohort of like individuals to provide mentoring and support. For example, 3% of the tenured or tenure-track faculty in SEAS is black, but this translates to three individuals, not exactly a critical mass. As graduate students are a direct pipeline to faculty positions in engineering, we propose that recruitment strategies should focus on increasing

the diversity of graduate students and faculty in SEAS. University-wide initiatives focused on recruiting URMs to WashU should continue and also be supported by SEAS.

**Table 2.** Diversity data for U.S. engineering schools (national average – NA)<sup>4</sup> and SEAS. Percentages by gender and self-identified race/ethnicity.

	<u>Undergraduate</u>		<u>Graduate</u>		<u>T/TT faculty</u>	
	NA	SEAS	NA	SEAS	NA	SEAS
<b>Gender</b>						
Male	80%	69%	74%	74%	84%	83%
Female	20%	31%	26%	26%	16%	17%
<b>Race/Ethnicity</b>						
White (U.S.)	65%	54%	28%	33%	66%	52%
Asian (U.S.)	13%	16%	7%	7%	27%	42%
Black (U.S.)	4%	8%	2%	3%	3%	3%
Hispanic (U.S.)	11%	7%	4%	3%	4%	1%
Native Am/ Pacific Islander (U.S.)	10%	1%	0%	1%	0%	0%
International (any ethnicity)	10%	12%	52%	49%	not separated	
2 or more races identified			1%			1%

WashU has focused on recruiting URMs and low-income students over the past five years. These efforts have led to a doubling of Hispanic-American and of Pell-eligible undergraduate students from 2012 to 2017<sup>3</sup>. From 2014 to 2016, the number of black students in the entering class increased 148%<sup>4</sup>. Scholarship programs such as the John B. Ervin Scholars Program and the Mellon Mays Undergraduate Fellowship provide financial support to a diverse population of students. Academic support is available to all students through Cornerstone and to first-generation, low-income, or students with disabilities through TriO. The graduation rates for black and white students at WashU in 2013 were 90% and 94%, respectively. Although the black graduation rate was lower, it is much closer to the white graduation rate than some other institutions (i.e., 12% lower for black students than white students at MIT).<sup>6</sup> However, these rates are for WashU as a whole. For SEAS, the graduation rate for white students who entered between 2007 – 2010 was 80%, while it was 68% for black students. Students that do not have a strong K-12 background in STEM require discipline-specific support and mentoring to succeed. We recommend that additional academic and mentoring support is needed to assist URMs, first-generation, and low-income undergraduate students in SEAS.

As SEAS increases the number of women and URMs, training is needed to create an inclusive environment so that we can continue to recruit and retain diverse students, faculty, and staff. Training on diversity and inclusion is part of the First Year Center programming for all undergraduate students. Graduate students, faculty, and staff do not undergo any formal training in diversity and inclusion. We suggest that yearly diversity and inclusion training is required to educate all members of the SEAS community in this area.

## **Recommendations**

Based on feedback from online submissions in response to a call for strategic planning ideas, undergraduate and graduate student forums, and individual meetings with a wide range of constituents, as well as data presented in the background, we have some broad recommendations to recruit, support, and educate students, faculty, and staff in SEAS to increase diversity and to create an inclusive environment.

### **Recruit**

Although there is still work to be done, WashU has made great strides in recruiting a more diverse pool of undergraduate students. University-wide initiatives will continue in this area, and SEAS should continue to support and participate in these efforts. In particular, making sure that diverse SEAS representatives are available during visit days and other school-wide recruitment events will help prospective students identify with like-individuals at SEAS. In addition, recruitment of a more diverse pool of graduate students and faculty must be a strategic focus of SEAS.

For graduate students, we recommend that a centralized graduate recruitment office be created. Currently, MS and PhD recruiting is done at the department level and is coordinated by a full-time faculty member. While the departments and faculty have the appropriate resources for minor recruitment efforts, such as a booth at a discipline-specific conference that the faculty are already attending for research purposes, they do not have the resources for major recruitment efforts, such as booths at large national conferences that are not discipline specific (i.e. Society of Women Engineers, National Society of Black Engineers) or at large graduate school fairs (i.e. Big Ten+ Graduate School Exposition). A dedicated recruitment officer could build relationships with feeder universities and invite groups of students from historically black universities and colleges to visit SEAS. We anticipate that developing personal relationships with undergraduate advisors at targeted universities will increase the diversity of our graduate applicant pool. Additionally, there are university-wide fellowships for graduate students from URMs (Chancellor's Fellowship) or for women (Olin Fellowship), but engineering-specific PhD fellowships for women and URMs would highlight and enhance the commitment from SEAS to diversity and inclusion. They would also allow us to recruit top engineering candidates from these groups.

For faculty members, search committees should use existing resources available for finding and recruiting diverse candidates before the search begins. Best practices, publicizing strategies, interview techniques, and information on implicit bias are available on the WashU Diversity and Inclusion website<sup>7</sup>. As SEAS plans to increase significantly its number of tenured and tenure-track faculty over the next five years, this is a golden opportunity to concurrently increase faculty diversity. It is critical to build the pipeline to faculty positions and to actively recruit a diverse pool of applicants. We suggest that efforts are made to invite a diverse pool of PhD students, postdoctoral fellows, and faculty members for department seminars. All departments hold seminars to interact with researchers at other schools. To our knowledge, there is not a focus on diversity for invited seminar speakers, but this could easily be built in to the existing seminar series and provide a new avenue for exposure to possible applicants and for word of mouth about the inclusive environment at SEAS.

## Support

As the population of students, faculty, and staff becomes more diverse, there must be support to address their individual needs. Although support is necessary at all levels, we believe SEAS should focus on support for undergraduate students. WashU has made a concerted effort to recruit diverse undergraduate students, and we want to ensure their success. Students from URMs, first-generation, and low-income backgrounds need more frequent and personalized advising. They may need additional support beyond that supplied by the standard four-year and major advisor. We recommend that a staff member in Engineering Student Services is dedicated to advising URM, first-generation, and low-income students and is trained to address their specific needs and direct them to additional resources if necessary. We also recommend that there is separate programming during first-year orientation tailored to each group since they have unique needs. This would also help students network with other students of similar backgrounds. We propose starting a mentor program to pair first-year students with juniors or seniors from similar backgrounds. The peer mentoring program would provide an additional level of support beyond that attained from traditional student-faculty or student-staff mentoring.

We would also like to suggest support for two other groups of undergraduate and graduate students that may not fall under the traditional categories of students who need support. One of these groups is international students. International students make up 12% of the undergraduate and 49% of the graduate student population of SEAS. The Office of International Students and Scholars provides a range of services to international students including orientation programs, visa information, and English language instruction. However, additional connections within SEAS would help international students form a network of individuals with shared cultural backgrounds. International students could have dedicated advisors, separate first-year programming, and a peer mentor program as described above for underrepresented groups.

The second group is student veterans. The School of Law, the Brown School, and the Olin Business School have student organizations to recruit and support student veterans. Student veterans within SEAS have expressed interest in starting a similar organization. We should support student veterans by helping to set up a website and provide funding for events. Student veterans have background and experiences that enhance the diverse community at SEAS.

Additional support is also needed at the graduate-student level. This support could be integrated into the additional resources suggested for the Masters and PhD programs in the strategic plan. If we achieve our goals of improving the diversity of our graduate student population, the students will need additional support to succeed in their program of choice.

## Educate

We use the word “educate” not in the sense of educating our students to make significant contributions in engineering fields, but to educate our SEAS community on appropriate ways to interact with a diverse population of individuals and methods to enhance inclusion. WashU has programming for first-year undergraduate students focused on diversity and inclusion, but does not yet have broad programming for graduate students, faculty, and staff. While there are opportunities for education in this area, such as seminars and workshops held by the Teaching Center or the Center for Diversity & Inclusion, attendance is voluntary and is self-selecting for individuals who are already interested in diversity and inclusion. We propose that yearly diversity and inclusion training is required for graduate students, faculty, and staff. Training for graduate students should be incorporated into the current graduate student orientation program. Training for faculty and staff should be led by Denise DeCou, director of diversity & inclusion in Human Resources. Faculty activity reports and staff evaluations should specifically address attendance at the training sessions and additional workshops or seminars voluntarily attended for diversity and inclusion.

## **Outcome measures**

Success will be measured by the following metrics for SEAS:

1. Increased percentage of women and URMs at the undergraduate, graduate, and faculty level.
2. Increased graduation rates for female, URM, first-generation, and low-income undergraduate students.
3. Increase in satisfaction level for inclusivity of the SEAS community in periodic climate surveys of students, faculty and staff.
4. Increased number of engagement opportunities for women and URMs from a broad support system within SEAS, WashU, alumni, and the local community.
5. Improved placement after graduation for women and URM undergraduate and graduate students.
6. Improved retention of women and URM faculty members.

## **References**

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