

DIVERSITY ACTION PLAN

CIVIL & ENVIRONMENTAL ENGINEERING GRADUATE STUDENT REPORT

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Introduction

In alignment with the College of Engineering strategic goals, this report provides Civil and Environmental Engineering (CEE) with detailed information regarding the state of diversity in order to facilitate the department's ability to make data-driven decisions that will enable CEE to attract increasing numbers of highly sought after diverse graduate students.



The report begins with recommended actions based on the analysis of data collected, including: national and institutional comparative demographic data regarding 2012 enrollment and degrees collected from the American Society for Engineering Education; graduate climate survey data collected in the spring and fall of 2013 respectively; graduate student focus group data collected in the fall of 2013; and information regarding current departmental practices collected from various sources, such as advisors, web pages, and departmental documents. Next the report provides a detailed discussion of study findings that informed the recommended actions. The report also includes an Action Plan Worksheet, which is meant to provide a template for the department to start mapping out a plan of action based on report recommendations. Appendices (separate attachment) include information about the research methods used to collect and analyze the data, as well as supplementary data tables.

Recommended Actions

Graduate students spend the bulk of their time within their academic departments engaging in coursework, research, lab-work, and peer interactions. While these recommendations are organized into headings for ease of review, many of them could also promote improvements in other areas. A brief summary of the findings, based on estimated means from the multilevel model, climate survey open-ended responses, and focus group data, can be found in each subsection. The first section related to “Recruitment” is included as a counterpart to suggesting improvements to the department’s demographic profile.

Recruitment

Goal. Increase the number of students in CEE from each of the different underrepresented groups in engineering. Given their small numbers, recruiting 1-2 more Hispanic and African-American students in each cohort would dramatically improve the diversity profile of the department.

Action 1: Create opportunities for the department (faculty and staff) to establish relationships with institutions, such as Minority Serving Institutions, that graduate higher numbers of underrepresented students.

Why It’s Important. At the graduate level, students apply to specific departments rather than an institution, which calls the reputation, quality of academic program, and diversity of the department to attention. Thus, informal social networks and faculty connections between CEE and programs at other undergraduate institutions become critical factors to successful (and diverse) graduate student recruitment. The research literature shows that successful recruitment includes institutional and faculty partnerships with undergraduate institutions, including minority serving institutions (MSIs). More than a third of the African American and a third of the Hispanic doctoral recipients in 2006 and 2002 (respectively) earned their baccalaureates at Minority Serving Institutions (MSIs).^{1,2} Therefore, targeting MSIs would be an efficient way to create a diverse pipeline of students into UW CEE.

What to do. (1) Encourage faculty to develop ongoing relationships with faculty at MSIs. Identify several MSIs with strong civil engineering programs and encourage faculty networking and collaborations with these institutions. Faculty and/or advisors could host informational seminars about doctoral study on the MSI campuses. The presentations and key messaging could be developed in advance for different faculty to use,

Findings related to Recruitment.

Similar to undergraduate data, CEE enrolls and graduates fewer African-American and Hispanic graduate students than the national averages. However, it enrolls and graduates more Native American and Pacific Islander Master’s and Doctoral students than the national averages. CEE has high enrollment of women at both graduate degree levels, although it awarded slightly fewer Master degrees in 2012 to women than the national average. The CEE web site offers links to a variety of resources and organizations on campus, but it is unclear how actively or proactively these resources are utilized to target recruitment of diverse students.

and open undergraduate research placements could be incorporated to bring MSI undergraduates onto the UW campus. Discuss sources of financial aid offered by UW, CEE, as well as assistantship information, to help students understand the cost of graduate studies at UW and various sources of financial support. (2) Ensure that CEE promotional materials are attentive to diversity. Feature a diverse group of students and faculty. Provide links to ASCE's diversity pages and use ASCE resources to target diverse recruitment.

Action 2: Recruit current UW students.

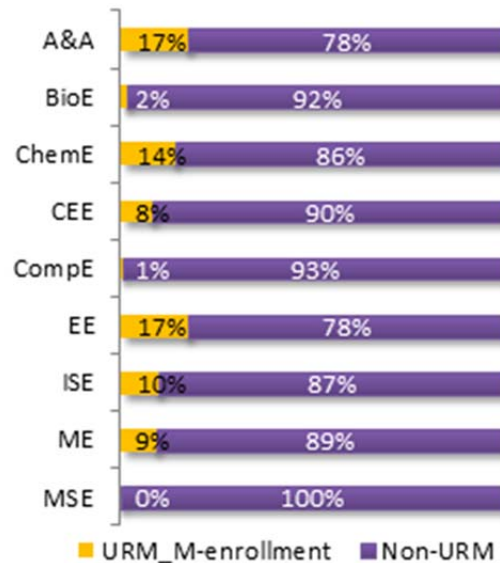
Why It's Important. Some facets of effective recruitment programs include: effective identification of prospective students, personal contacts, attractive financial aid packages, summer research programs, and recruitment of an institution's own undergraduates.^{3, 4, 5} UW runs numerous programs that target diverse students and prepare them for graduate study.

What to do. Identify programs on campus with goals pertinent to underrepresented student access to graduate education (i.e. undergraduate research programs, LSAMP, McNair Scholars and Early Identification Program – see undergraduate report for other programs), and then facilitate regular campus-based networking and information sharing meetings between all such programs. Identify faculty and staff whose enthusiasm for the CEE department will encourage students to take an interest in the department. Ask them to develop presentations and opportunities to bring current CEE students and other STEM students from populations of interest into CEE to see the type of opportunities available to students with graduate degrees. Build interpersonal connections with interested students to let them know the department is interested in them. These efforts could be done in conjunction with undergraduate recruiting efforts.

Action 3: Make longer term financial commitments to incoming URM and low-income students to increase yield of diverse students.

Why It's Important. Attractive financial aid is an effective recruitment tool for URM students to help offset the uncertainty of matriculating into a costly graduate program.⁶ Restructuring the financial package to provide students with a two-year (or longer) funding commitment would make CEE more competitive than other civil engineering programs in attracting students from diverse populations.

CEE Master's Enrollment, CoE Department Comparisons by URM status, 2012



Source: American Society for Engineering Education, ASEE Data Mining Tool, 2012

What to do. Work with the development office and donors to create fellowship packages with two years of financial commitment to underrepresented students. Cultivate donors whose interests are aligned with diversity in order to develop more packages and make CEE more attractive to targeted students. Emphasizing diversity in recruiting could bring new alumni and industry partners to the donor pool.

Experiences with Faculty, in Classrooms, and Online Courses

Goals. Ensure that graduate students are getting professional guidance and information from faculty. Ensure that the quality of teaching (including online courses) is consistent across the department. Improve classroom environments such that women and Pell eligible students feel more comfortable and respected in the classroom. Create opportunities in the PMP that facilitate faculty student engagement.

Action 1: Encourage faculty to connect with graduate students regarding professional preparation and opportunities.

Why It's Important. Numerous studies on graduate student attrition identify inadequate socialization and integration into the norms of academic research, poor advising and inconsistent mentoring as primary factors.^{7,8,9,10,11} Numerous reports and studies on doctoral education, in particular, assert that it is too narrowly focused on research; students are not adequately provided with the skills to teach, and students are not socialized for academic careers.^{12,13} Encouraging faculty to provide students with information regarding the different career options that exist, the necessary preparation for each, and opportunities to participate in activities that would prepare them professionally would support students in preparing themselves for and obtaining their desired careers.

Findings related to Faculty, Classrooms & Online Courses.

CEE graduate students indicated levels of satisfaction with their classroom experiences (4.08/5.0), online courses (3.66/5.0), and faculty (3.57/5.0) to be approximately average in comparison to other CoE departments, reflecting a neutral to slight level of satisfaction. In the CEE graduate student focus group, students found their interactions with faculty to be limited to advisors, and they described not always feeling comfortable discussing issues of professional concern with them. They felt it would be “weird” to approach faculty and ask them questions about their careers. Students thought that CEE should offer more informal social gatherings to bring faculty and students together. A student in the Professional Master’s Program (PMP) described limited opportunities to interact and build relationships with faculty due to the nature of the program. Quality of instruction was described as hit or miss, with the more junior instructors appearing more interested in teaching and asking for feedback. Students also noted that professors do not always prepare for classes or use effective teaching strategies. Women across the CoE are less comfortable asking questions in class. Pell eligible students across the CoE report feeling less encouraged to freely express themselves in class and less likely to perceive that professors treat them with respect. Students noted that the quality of instruction of online courses is not as effective as with traditional courses.

What to do. Encourage faculty to discuss career interests and objectives with advisees and other graduate students and provide professional guidance, including existing opportunities that students could pursue to prepare themselves for their desired career. Create opportunities for graduate students to interact with faculty regarding professional matters, such as a networking events or faculty panels, where students can ask faculty members questions pertaining to professional concerns, preparation, and opportunities.

Action 2: Share the Diversity Action Plan findings with CEE faculty and encourage faculty to use the Center for Engineering Learning and Teaching Instructional Services (CELT) to get feedback on their pedagogical techniques in the classroom and online.

Why It's Important. In order for faculty to help improve classroom experiences for all students, they need to be aware of issues that students have raised, as well as recommended actions that could help address these issues. Sharing the Diversity Action Plan findings with faculty would help increase faculty awareness of existing issues in the classroom and how they might work to address them. Further, seeking support from organizations like CELT, which offers both workshops as well as individualized consultations to improve teaching techniques, could provide the kind of feedback and guidance critical to improving classroom experiences for all students. Additionally, tapping existing expertise within the department by identifying and acknowledging effective faculty instructional and classroom practices would provide in-house resources for improving student classroom experiences.

What to do. Discuss areas for improvement with regard to students' classroom experiences, making sure to highlight the challenges faced by women and Pell eligible students, during a faculty meeting. Invite CELT to give a presentation at a faculty meeting that addresses these specific areas. Create a peer learning environment to encourage the CEE faculty with high course evaluation ratings to present information about their approach and philosophy to teaching. Identify resources to improve online teaching strategies.

Action 3: Create more opportunities for graduate students, particularly PMP students, to interact more casually with faculty.

Why It's Important. Much of the research literature on student retention and attrition is based on the theory that the more students are integrated academically (e.g. classroom, faculty engagement) and socially (interactions with peers) into the institution or department, the more likely they are to stay in the department.^{14, 15} Thus, satisfaction with these interactions is critical to a positive departmental climate conducive to retention. Hosting quarterly events or activities which promote interactions with students and faculty in a casual setting would help students feel integrated into the CEE community and create opportunities for approaching faculty for career guidance.

What to do. Organize department social events where graduate students and faculty can interact on a more casual level. If these activities are already being held, conducting a formative assessment for how they can be improved to encourage interactions across groups would be beneficial. Ensure that PMP students are included in these events, or if they do not accommodate PMP student schedules, organize separate events for these students to interact with faculty.

Experiences in Labs

Goals. Ensure that students continue to have access to resources to pursue research goals, that PIs are attentive to student needs, that labs are productive environments, and that students feel comfortable approaching advisors and asking for help.

Action: Encourage faculty to develop relationships with their students and check-in with them regularly to make sure they have the resources, guidance, and support they need in labs.

Why It's Important. Since labs are learning environments for graduate students, it is important for PIs, postdoctoral researchers, and research staff to be aware of the needs of graduate students in their labs. Further, students may not always ask for help when needed, particularly when they fear being viewed as incompetent or lacking ability.^{16,17} Therefore, it is imperative that faculty create an environment in their labs where students feel comfortable approaching them and asking questions.

What to do. Encourage faculty to allow students time to ask for clarification when doing lab work. Encourage them to be open to questions and check in with the students to ensure the work of the lab progresses and that students are learning. Ask faculty to share resources for students and how they are creating productive lab environments. Make them aware that they may unconsciously treat women students differently in lab environments (see next section).

Findings related to Experiences in Labs.

CEE graduate students rated their lab experiences a 4.13 out of 5, which is the CoE average for this subsection. Items included access to resources to pursue research goals, attentiveness of the PI, productivity, and comfort level approaching his/her advisor. College-wide, URM students reported a significantly less positive experience of experiments being fully explained to them before being delegated.

Personal Experiences

Goal. Create an inclusive climate in the department where students from underrepresented groups do not encounter discriminatory, offensive comments or more subtle forms of discrimination, such as micro-aggressions.

Action 1: Encourage faculty and graduate students to participate in trainings related to implicit bias and raising awareness of diversity issues.

Why It's Important. Lack of involvement by white faculty stemming from conflicting and ambivalent attitudes about diversity contributes to the failure of institutional diversity efforts.¹⁸ Stereotype threat impacts students when a particular part of their identity is named salient.¹⁹ For instance, research has shown that women score lower on math tests when reminded of their gender prior to the exam and that white male engineering students score lower than usual on tests when told that Asian students typically get better grades than students from other groups.^{20, 21, 22} Micro-aggressions arise from subtle and covert racist and sexist acts and occur at multiple levels, including the institutional level, the interpersonal level, and as humor that subtly derides particular students' place in engineering.²³ Identity-safe environments where students

are not reminded of stereotypes can encourage high expectations of performance for all students.²⁴ Working to recognize biases and developing ways to combat them will help CEE faculty and students work more effectively both in and out of the classroom. Encouraging faculty and students to participate in trainings focused on implicit bias and diversity issues would bring awareness to these issues and help faculty and students reduce incidents of discrimination and micro-aggressions.

What to do. Host an implicit bias presentation for CEE faculty and staff. The UW Center of Institutional Change, formed during the UW NSF-funded ADVANCE grant, is an invaluable resource for engineering departments. They run national workshops and trainings as well as quarterly department chair workshops on campus. The CIC's web site offers many resources, and CIC staff have consulted with organizations to train deans and faculty on issues of implicit bias. They also have a student group, PEERS Leaders, that gives presentations in classes to raise awareness among students.

Action 2: Facilitate communities for women and minorities.

Why It's Important. Building professional and social networks can counteract the isolation many women and minorities experience and provide them with the information, support, and knowledge they need to persist through graduation.²⁵ Underrepresented students are more likely to leave doctoral programs before completion²⁶ and have fewer opportunities for the professional socialization needed for successful graduate careers.²⁷ Attrition from graduate programs is largely due to inadequate integration and/or socialization rather than academic performance.²⁸

What to do. Organize different types of events (i.e. social, professional/networking) that provide opportunities for students and faculty to interact and make connections. Connect students with mentors (see Climate Actions below). Make students aware of organizations that will help them feel as if they are part of a smaller community on campus. STEM diversity groups on campus include the Society for Women Engineers (SWE), American Indian Science and Engineering Society (AISES), the National Society of Black Engineers (NSBE), the Society of Hispanic Professional Engineers (SHPE), Out in Science, Technology, Engineering & Mathematics (oSTEM), and Graduate Opportunities and Minority Achievement Program (GO-MAP).

Findings related to Personal Experiences.

According to the graduate climate survey, 19% of CEE students reported hearing their peers express racial stereotypes while 10% heard faculty expressing racial stereotypes. Similarly, nearly one-third (31%) of CEE graduate students heard their peers express gender-related stereotypes, and one-fifth (22%) reported hearing faculty make gender-related stereotypes. The focus group revealed several examples of female students being treated differently from male students by both faculty and other students. Two women noted that faculty seemed reluctant to assign research tasks that involved heavy equipment, while their fellow male students often viewed and commented on images of scantily clad women. These and other incidents described by students, in both the focus group and the survey, suggest that the department could benefit from training in implicit bias.

Climate

Goal. Ensure that the CEE climate is a positive one for all students.

Action 1: Create mentoring programs to match graduate students to faculty who share similar research interests and/or career trajectories and/or match graduates with more senior peers.

Why It's Important. Mentoring during graduate study is considered an effective strategy for both the integration and socialization of doctoral students. Traditional mentoring programs, which pair a graduate student with a faculty member, programmatic mentoring programs, and peer mentoring can provide students with role models, professional and personal skills and access to information about the norms and expectations of faculty careers.^{29, 30}

What to do. Establish a graduate student mentoring program to improve student experiences as well as provide them with personal career guidance. A structured mentoring program can connect students to experienced individuals (faculty or industry professionals and alumni) who act as advisors and role models in their respective fields of interest. A formal program can offer both one-on-one mentoring and professional and personal development seminars. Peer mentoring can help provide newer students with an orientation to the social and academic norms of the departments and help reduce isolation in newer cohorts. It can also help students learn about funding and various opportunities that exist. CWD has a long history of running mentoring programs, receiving the Presidential Award of Excellence in Science, Engineering and Mathematics Mentoring for its mentoring curriculum.

Action 2: Adapt and/or create resources and services geared specifically to Professional Master's Program (PMP) students.

Why It's Important. PMP is a relatively new educational model for UW students. These master's programs are designed to appeal to nontraditional graduate students who are not expected to work in faculty labs or spend a lot of time in their departments; critical to the success of this new educational model is meeting students' various needs. For example, it is important to support their sense of belonging in CEE, encourage and create opportunities to interact with both faculty and peers, and provide access to quality advising. All of these must take into consideration student commitments outside of UW, the timing their degree program cycle, and faculty and advisor availability.

Findings related to Climate.

The climate survey asks students a series of questions related to the climate in CEE such as encouragement to collaborate, sense of community, and perceptions of competitiveness within the department. Students indicated a "neutral" to "slight" level of agreement (3.59) regarding a positive climate in CEE, exactly the CoE average. Survey respondents also noted an absence of community in CEE. Students in the focus group spoke about the climate in mixed terms from "collegial" to "segmented". The PMP student representative noted many areas where the climate of CEE is not as accommodating to PMP students as it is for traditional students.

What to do. Bring a diverse group of PMP students (or recent alumni) together to candidly discuss their experiences in the program with respect to support services, quality of education, instruction, and advising. Develop a plan to improve these services. CWD is available to help support data collection and planning efforts.

Professional Development & Work Life Balance Concerns

Goal. Ensure that CEE graduate students receive the professional development and training they need to secure the types of jobs and careers in which they are interested. Ensure that students have access to information and resources that help create and maintain work-life balance.

Action 1: Offer professional development to CEE graduate students.

Why It's Important. National surveys and reports have brought attention to the need for research institutions to do a better job of preparing doctoral students for academic careers.^{31, 32} Information about the roles and responsibilities of faculty, the academic job search and the skills needed to succeed in faculty careers are often missing from graduate program curricula and yet are important to the postgraduate success of CEE graduates.

What to do. Offer a professional development seminar series to bring in qualified speakers to talk about various areas of skills development and networking for graduate students. This series could be outsourced in conjunction with a formal mentoring program (see Climate – What to do section above). Be aware of scheduling to accommodate schedules of PMP students as well as the traditional graduate students.

Action 2: Help students develop clear, individualized career trajectories for themselves.

Why It's Important. Graduate students with various backgrounds who complete doctorates report that their programs provided them with little information or understanding about the

Findings related to Professional Development & Work Life Balance Concerns.

Students indicated a “neutral” to slight” level of agreement that they were getting professional training from their department in terms of preparation in developing a dissertation, seeking an industry or academic career, producing publications, and teaching. They also expressed a desire to learn more about effective pedagogy. During the focus groups, students noted that they were not aware of any formal training or career support available through the department and had not sought anything out. In addition, the career fair cycle does not support career placement of PMP students. When the career fairs are held, PMP students have just started their program, and they have already finished the program in the following calendar year. CEE students were “neutral” (2.81) with regard to anticipating future problems with work-life balance, with first-generation college students and women significantly more likely to worry about access to child care, elder care, and maternity/paternity leave benefits.

academic job market and the reality of faculty careers.³³ Many students were not aware of other viable career options beyond academia.

What to do. The UW Center for Institutional Change has experience offering professional development symposia to recent Ph.D.'s and may be able to provide resource materials. A graduate student mentoring program could also serve to provide comprehensive professional development to CEE students. Invite successful graduate students, postdocs, recent alumni, or hiring managers to share their knowledge of the successful practices to secure professional and academic positions. These individuals could also share tips on work-life balance in work place settings.

Findings

This report presents preliminary findings related to graduate students in Civil and Environmental Engineering (CEE). Data were collected over the course of several months, using various sources, including a CWD-administered graduate student climate survey, ASEE demographic data on graduate civil engineering students from ABET-accredited institutions, and a CEE graduate student focus group.

Washington Demographic Makeup

The most recent data from the US Census shows an increase in Washington's racial and ethnic minority population from 20.6% in the year 2000 to 27.3% in 2010³⁴. The Hispanic population is the fastest growing group, growing by 71.2% over these ten years and now makes up 11.2% of Washington's overall population. The Non-Hispanic Multiracial population increased by approximately 62%, making them the second largest growing group, although they only account for 3.6% of Washington's population. The Asian and Pacific Islander population increased by 48.8% between 2000 and 2010 and accounts for 7.7% of the state's populace. Although Washington's Black/African-American population increased by 22.3% over the decade, these individuals only make up 3.4% of the overall population. The state's Alaskan Native and American Indian population also grew by 3.2%; however, this group is Washington's smallest racial/ethnic minority, only comprising 1.3% of the total population. Paralleling these statistics, the state's overall population grew 14.1% over the same decade.

Washington State Population

Washington State differs from the national population with higher proportions of Whites (82% versus 78%) and Asians (8% versus 5%) and inversely, lower proportions of African-Americans (4% versus 13%) and Hispanics (12% versus 17%).

Washington State demographics differ from the national population³⁵ with higher proportions of Whites (82% versus 78%) and Asians (8% versus 5%) and inversely, lower proportions of African-Americans (4% versus 13%) and Hispanics (12% versus 17%).

Demographic Data – National Degree and Enrollment Comparisons

The data source for the demographic analyses is the American Society for Engineering Education (ASEE) Engineering Data Management System (EDMS), which provides race/ethnicity and gender data on student enrollments and degrees for participating ABET-accredited programs. Rankings for each institution are based on total number of students enrolled/degrees granted.

EDMS data for 2012 showed 229 students enrolled in the UW civil engineering (CE) master's program, ranking UW third out of 191 ABET-accredited CE programs. The University of Illinois at Urbana-Champaign ranked first with 305 enrollees, followed by the University of Alberta with 287 students. The UW was followed by the University of Florida, with 226 enrolled students.

As for master's degrees granted in 2012, the University of Washington ranked 10th in civil engineering master's degree granting programs, awarding 106 degrees that year. Civil engineering programs conferring a similar number of degrees included Virginia Polytechnic Institute and State University (108), Polytechnic Institute of New York University (107), North

Carolina State University (101), and the University of Texas at Austin (99). University of California at Berkeley awarded the most civil engineering master's degrees (186).

The University of Washington's civil engineering doctoral program ranked 16th out of 134 ABET-accredited programs, with 79 enrolled students, similar to the University of California-Los Angeles (79), University of Minnesota-Twin Cities (77), University of Florida (81), and University of Notre Dame (76). The University of Texas at Austin had the largest number of enrolled PhD students in the US with 227 students.

With regard to doctoral degrees awarded, the UW ranked 40th alongside the University of Southern California, University of Wisconsin, University of Colorado (Denver), McGill University, Missouri University of Science and Technology, Florida International University, Northwestern University, Tufts University, and City University of New York. All ten institutions awarded 7 doctoral degrees. The University of California at Berkeley was the highest ranked doctoral degree granting institution of the 134 accredited doctoral programs in 2012, graduating 32 doctoral students.

National Enrollment and Degree Comparisons by URM

Master's Level. The CEE department came in above national averages in Asian-American (12%), Native American (1%), Pacific Islander (1%), and White (57%) student enrollment in civil engineering master's degrees. The department was below the national averages for master's degrees awarded to African-Americans and Hispanics. When comparing master's enrollment to degree percentages by race and ethnicity, UW's civil engineering percentages are similar across both categories (See Table 1). While CEE awarded more master's degrees than the national average to Asian American (10%) and White (63%) students, the department fell below national averages for master's degrees awarded to African-Americans and Hispanics.

Table 1: CE Enrollment & Graduate Degrees, National Comparisons by Race & Ethnicity, 2012

Race/Ethnicity	Master's				Doctoral			
	Enrollment		Degrees Awarded		Enrollment		Degrees Awarded	
	National	UW	National	UW	National	UW	National	UW
White	40%	57%	42%	63%	23%	56%	23%	57%
Foreign	29%	20%	28%	19%	57%	37%	56%	43%
Unknown	13%	2%	13%	3%	12%	4%	14%	0%
Hispanic	8%	5%	6%	3%	3%	0%	2%	0%
Asian American	6%	12%	7%	10%	3%	3%	4%	0%
African American	3%	2%	3%	2%	2%	1%	1%	0%
Multiracial	1%	0%	1%	0%	0%	0%	0%	0%
Native American	0%	1%	0%	0%	0%	0%	1%	0%
Pacific Islander	0%	1%	0%	0%	0%	0%	0%	0%
*URM students	11%	8%	9%	5%	5%	1%	4%	0%
**Non URM students	75%	92%	77%	92%	95%	99%	96%	100%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

Doctoral Level. As for doctoral enrollment and degrees awarded in 2012, the CEE department came in above national averages in enrollment (56%) and degrees awarded (57%) to White students. For all URM groups, the department came in below the national averages. Other than African American doctoral enrollment (1%), there was almost no representation of URM students at the doctoral level in CEE (See Table 1).

National Enrollment and Degree Comparisons by Gender

With respect to gender, UW was well above average with regard to CE master’s enrollment of women (34% vs. 26%), doctoral enrollment of women (35% vs. 26%), and doctoral degrees awarded to women (43% vs. 22%). However, UW was below average in master’s degrees awarded to women by one percent (25% vs. 26%). See Table 2.

Table 2: CE Enrollment & Graduate Degrees, National Comparisons by Gender, 2012

Gender	Master’s				Doctoral			
	Enrollment		Degrees Awarded		Enrollment		Degrees Awarded	
	National	UW	National	UW	National	UW	National	UW
Men	74%	66%	74%	75%	74%	65%	78%	57%
Women	26%	34%	26%	25%	26%	35%	22%	43%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

Demographic Data – UW College of Engineering Enrollment and Degree Comparisons

CEE was the largest department in the College of Engineering (CoE) with regard to Master’s enrollment (229), followed by Computer Engineering (154), Electrical Engineering (151), and Aerospace and Aeronautical Engineering (151). CEE awarded 106 master’s degrees in 2012, again followed by Computer Engineering with 86.

UW College of Engineering Enrollment and Degree Comparisons by URM status

Master’s Level. All engineering departments enrolled a high number of Asian American students in their Master’s programs, while Chemical Engineering, Computer Engineering, and Industrial and Systems Engineering enrolled the highest proportion of foreign master’s students. The CEE department was majority white, and like Bioengineering, this group made up 57% of students enrolled in each department. For all other groups, CEE came in below the CoE enrollment

average. (See Table 3) The sidebar figure on page 4 shows the race/ethnicity summary by underrepresented minority (URM) and non-URM groups.¹

Table 3. CEE Master's Enrollments, UW CoE Comparisons by Race & Ethnicity, 2012

	African American		Asian American		Hispanic		Native American		Pacific Islander		White		Foreign	
A&A	6	4%	28	19%	18	12%	1	1%	0	0%	81	54%	9	6%
BioE	0	0%	18	30%	1	2%	0	0%	0	0%	35	57%	3	5%
ChemE	0	0%	0	0%	1	14%	0	0%	0	0%	0	0%	6	86%
CEE	4	2%	28	12%	11	5%	2	1%	2	1%	131	57%	46	20%
CompE	0	0%	24	16%	1	1%	0	0%	0	0%	75	49%	44	29%
EE	13	9%	28	19%	9	6%	2	1%	1	1%	66	44%	24	16%
ISE	1	3%	5	16%	2	6%	0	0%	0	0%	10	32%	12	39%
ME	1	1%	17	12%	9	6%	1	1%	2	1%	96	66%	17	12%
MSE	0	0%	2	17%	0	0%	0	0%	0	0%	5	42%	5	42%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

While the department is slightly above average with regard to total URM enrollment at the master's level, CEE is average with regard to other CoE departments in its Hispanic and Native American enrollment. However, CEE enrolls above average numbers of African American (4 or 2%) and Pacific Islander (2 or 1%) master's students. At the master's degree level, the data tell a similar story with its URM master's degrees awarded (see Table 4).

Table 4. CEE Master's Degrees Awarded, UW CoE Comparisons by Race & Ethnicity, 2012

	African American		Asian American		Hispanic		Native American		Pacific Islander		White		Foreign	
A&A	0	0%	5	14%	1	3%	0	0%	0	0%	24	69%	3	9%
BioE	0	0%	4	18%	0	0%	0	0%	0	0%	17	77%	1	5%
ChemE	0	0%	1	10%	0	0%	0	0%	0	0%	5	50%	3	30%
CEE	2	2%	11	10%	3	3%	0	0%	0	0%	67	63%	20	19%
CompE	0	0%	15	17%	3	3%	0	0%	0	0%	37	43%	25	29%
EE	3	4%	21	31%	2	3%	0	0%	0	0%	19	28%	15	22%
ISE	0	0%	0	0%	0	0%	0	0%	0	0%	5	56%	3	33%
ME	1	2%	5	10%	1	2%	0	0%	0	0%	34	68%	8	16%
MSE	0	0%	2	25%	0	0%	0	0%	0	0%	3	38%	2	25%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

¹ Like above, the URM students come from African American, Hispanic, Native American and Pacific Islander backgrounds. Non URM students are comprised from White, Foreign and Asian American backgrounds. Because of this composition, totals may not add up to 100%.

Doctoral Level. Table 5 shows the enrollment data for PhD programs by CoE department and Race/Ethnicity category (according to ASEE's grouping). In comparison to its CoE counterparts, CEE ranks very low in terms of URM enrollment at the Doctoral level, with one African American student enrolled. CEE's Foreign Doctoral student enrollment is on par with three other departments in the college.²

Table 5. CEE Doctoral Enrollment, UW CoE Comparisons by Race & Ethnicity, 2012

	African American		Asian American		Hispanic		Native American		Pacific Islander		White		Foreign	
A&A	2	4%	3	7%	3	7%	0	0%	0	0%	21	46%	14	30%
BioE	0	0%	5	33%	1	7%	0	0%	0	0%	2	13%	6	40%
ChemE	1	1%	10	13%	5	6%	0	0%	0	0%	43	55%	14	18%
CEE	1	1%	2	3%	0	0%	0	0%	0	0%	44	56%	29	37%
CompE	0	0%	11	6%	4	2%	0	0%	0	0%	80	46%	67	38%
EE	1	1%	12	6%	4	2%	0	0%	0	0%	48	25%	111	58%
ISE	1	5%	1	5%	0	0%	0	0%	0	0%	4	18%	16	73%
ME	1	1%	13	12%	3	3%	1	1%	0	0%	32	30%	48	45%
MSE	0	0%	2	4%	4	7%	1	2%	0	0%	27	47%	21	37%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

At the doctoral degree level, a pattern similar to enrollment emerges (see Table 6). Similar to the most other CoE departments, CEE graduated no URM students in 2012. Bioengineering awarded one PhD to a Hispanic student while MSE awarded two PhD degrees to African Americans. No other CoE departments awarded doctoral degrees to URMs in 2012.

Table 6. CEE Doctoral Degrees Awarded, UW CoE Comparisons by Race & Ethnicity, 2012

	African American		Asian American		Hispanic		Native American		Pacific Islander		White		Foreign	
A&A	0	0%	0	0%	0	0%	0	0%	0	0%	3	50%	3	50%
BioE	0	0%	5	33%	1	7%	0	0%	0	0%	6	40%	2	13%
ChemE	0	0%	2	20%	0	0%	1	10%	0	0%	3	30%	4	40%
CEE	0	0%	0	0%	0	0%	0	0%	0	0%	4	57%	3	43%
CompE	1	4%	2	8%	0	0%	0	0%	0	0%	11	42%	10	38%
EE	0	0%	0	0%	0	0%	0	0%	0	0%	6	27%	14	64%
ISE	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	3	100%
ME	0	0%	1	10%	0	0%	0	0%	0	0%	2	20%	6	60%
MSE	2	15%	2	15%	0	0%	0	0%	0	0%	5	38%	3	23%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

² Like above, the URM students come from African American, Hispanic, Native American and Pacific Islander backgrounds. Non URM students are comprised from White, Foreign and Asian American backgrounds. Because of this composition, totals below may not add up to 100%.

UW College of Engineering Enrollment and Degree Comparisons by Gender

Master’s Level. CEE had the largest *overall number* of female student enrollees in the master’s program (78). In terms of the proportion of enrollees, the department came in third. Chemical Engineering (ChemE) enrolled the highest percentage of women (71%), followed by Biomedical Engineering (BioE) (51%). See Figure 1.

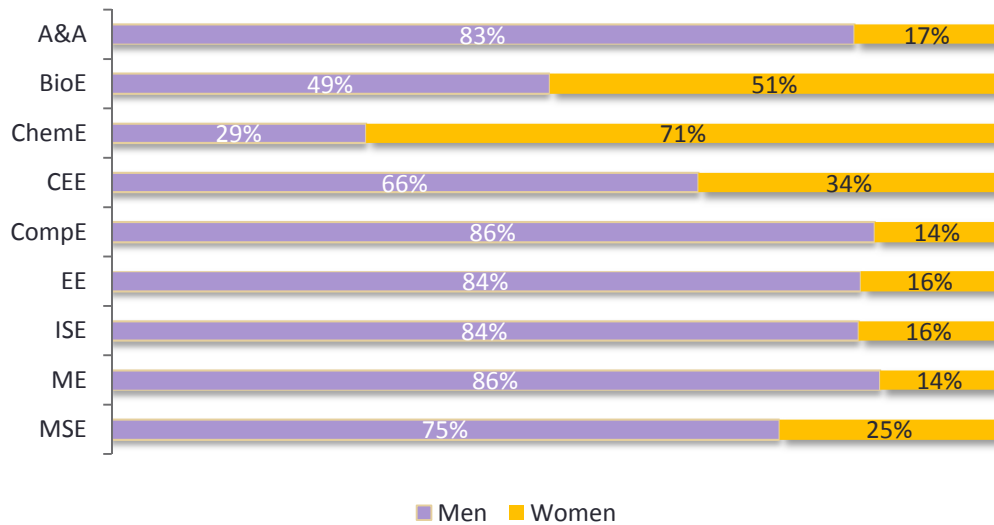


Figure 1: CEE Master’s Enrollment, UW CoE Comparisons by Gender, 2012

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

In terms of Master’s degrees awarded to women, CEE (25%) ranks fifth after ChemE (60%), MSE (50%), BioE (36%), and ISE (33%). Table 7 below summarizes enrollments and degrees granted by department for both graduate levels.

Table 7. CEE Graduate Enrollment and Degrees Awarded, UW CoE Comparisons by Gender, 2012

	Master’s				Doctoral			
	Enrollment		Degrees Awarded		Enrollment		Degrees Awarded	
	Men	Women	Men	Women	Men	Women	Men	Women
A&A	83%	17%	86%	14%	78%	22%	100%	0%
BioE	49%	51%	64%	36%	60%	40%	60%	40%
ChemE	29%	71%	40%	60%	76%	24%	80%	20%
CEE	66%	34%	75%	25%	65%	35%	57%	42%
CompE	86%	14%	84%	16%	76%	24%	84%	15%
EE	84%	16%	81%	19%	80%	20%	77%	22%
ISE	84%	16%	67%	33%	45%	55%	66%	33%
ME	86%	14%	84%	16%	81%	19%	80%	20%
MSE	75%	25%	50%	50%	72%	28%	76%	23%

Source: American Society for Engineering Education, ASEE Engineering Data Management System, 2012

Doctoral Level. At the doctoral level, CEE enrolls the largest proportion of women PhD students at 35%, followed by MSE at 28%. Similarly, CEE awarded 42% of its doctoral degrees to women, the highest of any department in the CoE. See Table 7 above.

CEE General Student Experiences

Quantitative Survey Findings

A graduate student climate survey was conducted across all engineering departments at University of Washington in the fall of 2013. For the UW Civil and Environmental Engineering (CEE) major, a sample of 32 students responded to this survey. Their responses are compared with students from the remaining nine engineering majors surveyed. Appendix III (separate attachment) shows responses rates by major and student demographic.

Results for the survey were assessed for eight broad outcomes. Each outcome was created as an average of multiple survey items. Table 8 contains descriptions and reliabilities of each outcome. A table of specific survey items included in each outcome can be found at the end of Appendix X (separate attachment).

Table 8: Outcome measures, number of items included in measure, reliability, and description

Outcome	# items	Cronbach's α	Description
Classroom	8	0.751	Experiences and comfort level in the classroom
Personal Experiences	18	0.680	Number of times student reported feeling judged, singled out, or hearing stereotypes
Online	5	0.726	Student experience with online courses
Labs	10	0.851	Student experience with laboratory work
Climate	9	0.674	Overall perception of climate
Faculty	9	0.811	Perceptions of experiences with faculty
Professional Development	14	0.922	Perception of career preparation
Work Life Balance	7	0.847	Degree to which student anticipates work-life balance

Source: CWD, 2013 COE Graduate Student Climate Survey

For each outcome, an unconditional model was run to estimate the mean value for the outcome across all engineering majors, as well as the variance between students and the variance between majors. The estimated mean is the estimated average value of that outcome across all engineering majors, based on a five-point rating scale, with three being the mid-point. One exception is Personal Experiences, which is a count of the number of “yes” responses out of a total of 18 items. Appendix V provides more detail on the values generated in the model including standard errors and variances (separate attachment).

The data from the model show that the estimated average rating for all outcomes is greater than the mid-point (3), except Personal Experiences and Work Life Balance, with the average satisfaction being highest for Labs. Table 9 summarizes the outcomes (in terms of differences from the estimated mean) for all engineering majors, including CEE. The largest deviations from the mean (more than three times the standard error listed in the table above) have been highlighted in dark purple, and the lesser deviations from the mean (more than two times the standard error listed in the table above) have been highlighted in lighter purple. Those cells not highlighted have lesser deviations or can be considered approximately equal to the mean.

Table 9: Deviation from overall expected mean and estimated mean for each outcome, by major

Major	Classroom	Personal Experiences	Online	Labs	Climate	Faculty	Professional Development	Work Life Balance
A&A	0.03	0.10	-0.05	0.04	0.03	-0.02	0.19	0.04
BioE	0.05	-0.37		0.18	0.13	0.20	0.17	0.13
Chem E	-0.01	-0.21		0.07	0.03	0.03	0.08	0.04
CEE	0.06	-0.02	0.23	0.01	0.00	-0.04	-0.08	-0.19
CSE	0.15	-0.15	0.19	0.11	0.17	0.17	0.46	0.25
EE	-0.13	-0.31	-0.13	-0.05	-0.12	-0.19	-0.18	0.25
HCDE	0.15	-0.15	-0.13	0.02	0.13	-0.04	-0.01	0.02
ISE	-0.10	-0.10	0.06	-0.05	-0.07	-0.02	-0.07	-0.17
MSE	-0.14	1.12		-0.26	-0.08	-0.04	-0.30	-0.13
ME	-0.06	0.10	-0.18	-0.08	-0.20	-0.06	-0.26	-0.24
<i>Estimated mean</i>	4.02	0.87	3.43	4.12	3.59	3.61	3.62	3.00

Source: CWD, 2013 COE Graduate Student Climate Survey

For example, the multi-level model estimated CEE majors, on average, to rate their satisfaction with work life balance issues 0.19 points *lower* compared with the expected average rating of satisfaction with work life balance issues (the mean value can be found on the last row of the table to be 3.00). Therefore, CEE majors have an expected average rating of satisfaction with work life balance issues of 2.81 on a five-point rating scale. *Looking across all of the outcomes, CEE is either approximately average in all survey outcomes compared to the other graduate engineering majors, except concern with work life balance issues, where CEE is below average.*

As the above table shows, CEE students did not report **higher satisfaction** for any outcome measures when compared to other engineering majors.³

CEE students reported **approximately average satisfaction** compared to other UW engineering majors for the following subsections:

- **Classroom:** CEE students are roughly as likely as students from other majors to feel comfortable, encouraged, respected, and less overwhelmed.
- **Personal Experience:** CEE students are roughly as likely as students from other majors to feel they have been singled out unfairly, judged negatively, or heard stereotypes expressed related to race/ethnicity, gender, or disability status.
- **Online:** CEE students are roughly as likely as students from other majors to feel satisfied with their experiences with online courses.
- **Labs:** CEE students are roughly as likely as students from other majors to feel satisfied with the resources, opportunities, and climate within their laboratory.

³ While the variance across all students is much higher than the variance across the 10 engineering majors, the outcomes reported here are where CEE graduate students rated the department at least three standard errors away from the mean, suggesting CEE is very different from other engineering departments for the outcomes list above.

- *Climate*: CEE students are roughly as likely as students from other majors to perceive that their department is collaborative and encouraging.
- *Faculty*: CEE students are roughly as likely as students from other majors to feel that faculty are helpful and accessible.
- *Professional Development*: CEE students are roughly as likely as students from other majors to agree that their department provides resources for attending conferences, joining professional associations, securing funding, preparing for a job, writing papers, and teaching courses.

CEE students reported **lower satisfaction** compared to other UW engineering majors for the following subsection:

- *Work-Life Balance*: CEE students are less likely than students from other majors to anticipate not (in other words, *more likely to anticipate problems*) having a problem balancing work and family and gaining access to things like child care, elder care, part-time work, paternity/maternity benefits.

Qualitative Survey findings

Classroom

Graduate students had mixed reviews of course instructors. While a majority of students responded that they have gotten a wealth of exposure to research in interesting areas with knowledgeable professors and plenty of materials for reference, others noted that experiences like these vary. As one student answered, “Instruction is good but variable. This is a big university focused mainly on research, so my expectation of instruction quality is less than a smaller university focused on education.” Other students had more specific instances of concern over instruction, including reservations regarding PhD students “who have very poor teaching practices and do not have the understanding of material necessary” when teaching graduate classes. One student noted distinctions among faculty, where “older faculty members [are] clearly recycling old lesson plans from the last 20 years” and “the newer faculty go out of their way to create dynamic learning environments and request feedback on improvements they can make throughout the quarter.”

Additionally, two students mentioned that while theory in classes was important, they expected more “hands-on learning.” Specifically, they hoped to be “working with modeling software” and have “opportunities for industry outreach or career advising.”

Online

Feedback regarding online coursework from students also varied. One student noted that the experience was what s/he expected from an online course, “that I would have to be proactive and self-motivated.” Another student had noted, “I wasn't sure what to expect from on-line instruction or the curriculum. I have found that students ask more questions and have more in depth dialogue than in the conventional classroom. With rare exception, the instructors have guided and added to this dialogue in a way that promotes thought and growth.” One student requested that video lectures be offered “to help reinforce the material for the student and give the student more of the in classroom atmosphere [in] the online courses.” Another student felt that his/her online course needed more discussion, rather than more material to cover. They noted that because the physical interaction was gone, more review of the material via discussion or reiteration was necessary.

Labs

Only one CEE graduate student response was submitted to the open ended question about laboratory experiences. The student mentioned a “gender bias” in the lab, where “men do the more physical jobs, while women are given easier jobs. Although professors try to change this by hiring more women, the bias is still perpetuated when the women are assigned to [be] ‘assistant’ to the guys doing the heavy lifting.”

Climate

Four responses were submitted on this subject. One student felt frustrated at the cost of graduate education and the lack of a corresponding quality for it, mentioning that “our department charged \$500 per credit for classes but miserably fails to provide anywhere near this level of quality of education.”

Two students commented on the community aspect of the department that they felt was absent or too competitive. For one student, “there is little engagement between graduate students, faculty, and staff as a department”; feeling instead as if in “a factory churning out degrees to raise money for the department.” For the other student, speaking about the Transportation sub-discipline specifically, there was seldom sharing of “important information like career development or job openings.”

A student whose entire curriculum has been online felt it hard to comment on the department climate, but said, “The classroom climate has been global, which I deeply appreciate.”

Faculty

CEE graduate students had mixed responses regarding their experiences with faculty and mentors. One student mentioned that they “did not know we had an option to have a mentor. This was never introduced or discussed with me.” Another student shared that s/he has a main mentor from another department “which provides a different perspective.” One student mentioned having had “a lot of peer mentors or recent graduate mentors.” Another respondent noted the value of sharing career stories with students as “helpful and beneficial.”

Two names that were specifically mentioned as figures that have made a great impact on a student were Dave Baska and Joe Mahoney, who both “took the time” to encourage a graduate student to continue in the program who was close to dropping out.

Professional Development

In terms of professional development, students felt that more training on teaching methods and curriculum development needs to be emphasized, so graduate students feel prepared for future careers in academia. One student felt the opportunity was there “but typically there is no formal guidance or feedback on teaching methods.” Another student asked for more “teaching opportunities.”

Echoing a similar sentiment although not related to teaching opportunities, one student’s response requested “more real-world knowledge and experience.” Another student requested more travel award funding to increase students’ (and presumably the department’s) visibility.

Work-Life Balance

One student felt that discussion of work-life balance was an important subject that is rarely discussed. The student noted that this balance “is a constant struggle for most professionals I know. I don’t know if that is something that can be taught-but it should be discussed.”

Qualitative Findings related to Student Groups of Interest

The graduate survey provides a general overview of student perceptions of their engineering major. However, it is limited in what it can report about the experiences of specific student populations of interest, such as underrepresented minorities (URM – African-American, Hispanic-American, Native-American, and Pacific Islander), women, low income students, veterans, students with disabilities, LGBTQ students, and first generation college students. In some cases, the sample size for these populations was too small to draw any conclusions at the major/department level. In other cases, students were not asked to identify as belonging to particular groups on the survey.

While the engineering student survey findings for some of these populations of interest are briefly summarized below, Appendix IX contains a detailed narrative of the survey findings with respect to these particular groups.

CoE survey results regarding URM graduate students.

URM students differed significantly from non-URM students on three survey items, with URM students perceiving that the department doesn’t do as much to provide travel stipends for conferences, that students compete against each other for funding, and that lab experiments are not fully explained.

To provide richer, department-specific data related to the groups of interest listed above, we conducted a focus group with graduate students who self-identified as belonging to one or more of these groups to capture information about their experiences. All CEE graduate students were sent an email by the graduate student advisor, and those students who identified with one or more under-represented groups (or other groups of interest) in engineering were invited to participate in a focus group with CWD staff.

The focus group was conducted with three CEE graduate students in October 2013. Student participants represented the following groups: women, low-income students, and LGBTQ students. Some students identified with more than one group. These findings are organized to match up to the survey outcome categories presented above; however, due to the semi-structured nature of focus groups, not all survey outcome categories have corresponding focus group findings.

Classroom

In terms of the quality of instruction and learning, student responses indicated that it was “hit and miss.” On the positive side, one woman described professors as “perfect, awesome, brilliant, know everything, bring in props [to] demonstrate, explain [things] in five different ways, [and] make it sound beautiful.” Another woman spoke positively about “classes with young professors who are interested in their teaching [and] ask for feedback. A man stated,

“My best one was a PhD student.” He went on to explain that he thought this might be the case because the doctoral student was “closer to our learning stage.”

In contrast, this same student explained that he has “had some really bad ones” who seem to be “so smart that they forget what it takes to learn the stuff,” and “they don’t prep.” A woman reiterated, “Some are awful, not prepped.” She also described one professor who creates PowerPoint slides that are snapshots of the textbook, and she does not find the book to be particularly good or helpful. She explained that this particular professor is “a big name.” Another woman stated that some professors are gone because of research, but she went on to say that “you still learn something even with the wasted time.”

Personal Experiences

The women in the group discussed their experiences both in terms of being women and in terms of being gay. In terms of their experiences as women, one student described how she feels that many young professors seem to want to hire women, yet their actions seem to indicate that they “want to hire women so they can say it,” not necessarily because of the strengths that women would offer. The student described how the

professors do not seem to think that the women can handle certain aspects of the work, particularly the physical components, so they will put women in projects “to help the guys” saying things like “the guys will help her do it.” This woman also indicated that there seems to be somewhat of a boys club feeling, where professors will invite male students to “talk over beers,” whereas this invitation has not been extended to her.

This same woman described her office group, in which there are six men and one or two women. Generally speaking, she described interactions between the men and women in the group as friendly, and said, “One-on-one, [the guys] are respectful, [but] in a group, it’s different.” For example, “guys talk about hot girls, masturbation, [and] the *hotness* of girls around the room,” creating a “guycentric” environment. She indicated that she tries not to focus on it, but “it’s weird and objectifying.” She feels that if there were more women in the group, the men probably would not speak this way. She did add that one professor chimed in and said it was not appropriate. Another woman expressed that she had similar experiences but more so as an undergraduate CE student. She went on to say that there are more women in her group, “which frames the dynamic of my lab group.”

In terms of their experiences as gay students, both women described them as positive. One woman said, “[I’m] gay and I haven’t experienced anything negative.” She went on to say she thought it had a lot to do with the numbers. When asked how the department has been supportive, both students indicated that it was not anything specific or formal that the department was doing. One woman said, “People seem fine with it. My advisor includes my fiancée at meetings in her home.” Another woman said, that it is “not ever brought up.” She

CoE survey results regarding women graduate students.

Women students are less comfortable asking questions in class, less likely to agree that they have been provided the knowledge to develop a course, and more likely to anticipate problems with work-life balance, including difficulty with access to child care, elder care, part-time work, and paternity/maternity benefits.

expressed that she felt like faculty were inclusive, and she would not feel weird about bringing her partner to any events.

Climate

When asked to describe the department, one student found the department collegial and very friendly. Another indicated that there was not a lot of social interaction and that it felt segmented. One student described the department as *weird* and a *collection of quirky* individuals but added that this was a positive thing.

With regard to program expectations, a student in the PMP explained that he felt a bit misled about the program. First, he applied to the regular Master's program, and he wanted to do research. When he applied to the PMP, he did not realize he would not be a "Research PMP." Further, he felt that the department chair made a sales pitch about the program, indicating that the state may require a Masters for the Professional Engineering licensure, and that the PMP would only require a 5th year of courses. Instead, it has turned out to be more like a four or five quarter program.

CoE survey results regarding graduate students with disabilities (SWD).

SWD differed significantly from non-SWD on only one survey item, with SWD being less likely to anticipate problems or conflicts with availability of part-time work.

Faculty

One woman described professors in CEE as laid back and very good about work-life balance, explaining that some (particularly those in the Structures sub-discipline) take students out for lunch and/or for drinks. She also indicated that mentor relationships seem to exist with faculty in various sub-disciplines. Another woman described faculty advisor meetings as "accessible;" however, she qualified this, explaining that she talks about certain things with her advisor, but that it's "not her thing to mentor me about [personal matters]." She went on to say that she does not interact much with other professors. In fact, she said that meeting one-on-one with them was "hard," and that "it would be weird to do that," although she thought they would probably be receptive during office hours.

A man in the Professional Master's Program (PMP) explained that faculty/advisor relationships in his program were "non-existent." He explained that even though students are assigned to a faculty advisor, students do not have access to them because they are not part of the lab or doing research with faculty members. He stated, "We're an extra burden for faculty. We don't help their research interests [like] traditional graduate students." As a result advisors do not play a mentoring role, and a lack of faculty mentoring is seen as a gap by this student.

CoE survey results regarding low income graduate students.

Pell eligible students report feeling less encouraged to freely express themselves in class, less likely to perceive that professors treat them with respect and less likely to feel that their department provides advising on how to secure funding.

Instead students must track down advisors to set up formal and structured meeting times where they get help choosing classes and have their advisor sign forms.

Professional Development

With regard to professional preparation, one man indicated that he had completed an internship, which he had found himself through a posting on the UW website. A woman mentioned that she thought the department might do things to provide career support, but she was not aware of what they exactly they offered. She expressed that she felt a bit inundated with emails. She went on to express that she felt a bit too far from a job to be thinking about it much at this point, but she indicated that she thought her advisor might provide her with some resources.

A PMP student expressed issues with the annual career fair in January, which is geared towards graduate and undergraduate students. He stated, “The timing is terrible for PMP. You’ve completed one quarter, nothing to boast about. They offer internships. PMPs take four quarters in reality. If you’re a fourth quarter graduate, you finish in the fall. No career fair when you’re doing a job search. They haven’t figured out the cycle yet. They need to check with hiring firms [and] hold a specific PMP career fair. He went on to explain how relationships with professors and other professional contacts help people get jobs, but this presents a problem in the PMP program because, as mentioned previously, they do not have the similar opportunities as other students to build relationships with professors. Their interactions with professors are generally limited to the classroom, therefore “they can’t vouch for PMPs in the same way.”

A woman close to completing her doctorate indicated that she plans to go into academia, and she has found the professors in her subgroup to be “very helpful.” In fact, she described how a professor talked to a school about her and encouraged her to apply, and she ended up getting a job.

CoE survey results regarding first generation college students.

First-generation college students are more likely to anticipate problems with access to child care, elder care, paternity/maternity benefits, and funds to complete their graduate program, are less likely to feel that their suggestions are taken seriously by a lab group leader, more likely to feel that finances have adversely affected pursuit of a graduate degree, and more likely to report feeling comfortable asking questions in class.

Next Steps

The quantitative and qualitative data findings suggest a series of recommendations to improve graduate student recruitment as well as the overall climate and the student experience for underrepresented and all students in Civil and Environmental Engineering. The next step after reviewing this report is to determine which actions are the most feasible and of the departmental priority to undertake. An effective strategy to identify the actions to take would be to bring department stakeholders together and discuss departmental priorities and actions that may be fairly simple to implement. CWD can help facilitate this action plan development in your department and help CEE complete worksheets to move forward.

On the following page is a “Graduate Student Diversity Action Plan Worksheet” that can be used to think about how to effectively and realistically begin to take action in a meaningful way. The “Recommended Actions” section above provided names of resources that can be leveraged for efficiency. CWD also has many years of experience in running student programs and evaluating the effectiveness and success of such programs, believing in using research to better inform practice. Through its work with units at UW and beyond, CWD can help CEE implement these actions by providing technical assistance, making introductions to key organizations, and monitoring the outcomes of initiatives undertaken.

Graduate Student Diversity Action Plan Worksheet Winter 2013

(Please use a separate sheet for each activity pursued.)

1. **What action that addresses gender equity and/or diversity will you undertake?**
2. **What does the department hope to achieve by pursuing this specific activity?**
3. **How will you know you've been successful? How will success of this activity be measured?**
4. **Who is responsible for the day-to-day implementation?**
5. **Who will oversee the implementation of the action?**
6. **What resources and assistance are needed to conduct this activity? (e.g. staff members, faculty, department chair, CWD, campus partners, budget, other partnerships, etc.)**
7. **What is the timeline for successfully accomplishing this activity? What steps need to be accomplished at various points in the academic year?**

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