Annual Report for Period: 09/2011 - 08/2012
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Principal Investigator: Borman, Kathryn M.
Award ID: 0930220
Organization: U of South Florida
Submitted By:
Borman, Kathryn - Principal Investigator
Title:
Partnerships for Adaptation, Implementation, and Dissemination (PAID): Collaborative Research-Alliance for the Advancement of Florida's Academic Women in Chemistry & Engineering

Project Participants

Senior Personnel

Name: Borman, Kathryn
Worked for more than 160 Hours: Yes
Contribution to Project:
Dr. Borman is a professor of Anthropology and leader of the the Alliance for Applied Research in Education and Anthropology (AAREA)in the Department of Anthropology at the University of South Florida. She has taken the lead role in coordinating and implementing the collaborative efforts of the ADVANCE PAID award as well as the ongoing program activities at USF.

Name: Thomas, Sylvia
Worked for more than 160 Hours: Yes
Contribution to Project:
Dr. Thomas is the Assistant Dean for Diversity and External Programs in USF's College of Engineering and is on faculty in the Department of
Electrical Engineering. She has taken the lead role supervising the ongoing program activities in the College of Engineering and other STEM disciplines at USF.

Name: Tyson, Will
Worked for more than 160 Hours: No
Contribution to Project:
Dr. Tyson is an assistant professor in the Sociology department. He modified and administered the online faculty climate survey in the spring of year one. He analyzed the preliminary results of the survey, which was included in the Findings section of the year one annual report. This analysis was used to identify the topics of relevance to women faculty, which have been incorporated into the mentorship and recruitment practices workshops implemented on campuses.

Name: Fernandez, Eva
Worked for more than 160 Hours: No
Contribution to Project:
Ms. Fernandez is the Director of Engineering Experiential Learning at USF College of Engineering. She is well known in the STEM disciplines on the USF campus. She has participated in the recruitment practices and mentorship workshops and will take a leadership role in facilitating the development of on campus workshops. She has also had a pivotal role in collecting USF faculty data.

Name: Lewis, Jennifer
Worked for more than 160 Hours: No
Contribution to Project:

Dr. Jennifer Lewis is an associate professor of Chemistry at the University of South Florida. She has acted as a liaison with the USF Chemistry department.

Post-doc

Name: Smith, Chrystal

Worked for more than 160 Hours: Yes

Contribution to Project:

Dr. Chrystal Smith is a Postdoctoral Scholar at USF and is the project manager of the ADVANCE PAID award. She is responsible for the overall day to day implementation the ADVANCE PAID award. She is in regular contact with collaborators on other campuses. She supervises project activities and the USF budget as well as the USF on campus activities.

Graduate Student

Name: Martinez, Vanessa

Worked for more than 160 Hours: Yes

Contribution to Project:

As the Graduate Assistant on the ADVANCE Paid award, Vanessa Martinez is responsible for the organization and assistance with grant materials
related to survey administration and the collection of faculty data. Her other responsibilities include creating meeting agendas, taking
conference and meeting minutes, and developing and designing posters and brochures for publication and presentation.

Undergraduate Student

Technician, Programmer

Other Participant

Name: Smith, Dwayne

Worked for more than 160 Hours: No

Contribution to Project:

Dr. Smith is the Senior Vice Provost of the College of Arts and Sciences at USF. He is our liaison to the USF Office of the Provost. He attends the weekly conference calls when his schedule permits and has attended one of the PI meetings. He also provides invaluable advice and support to the AAFAWCE activities on the USF campus.

Research Experience for Undergraduates

Organizational Partners

The University of Michigan

The University of Michigan STRIDE group has offered us the use of the ADVANCE PAID materials that they developed.

University of Wisconsin-Madison

We consulted with University of Wisconsin about materials related to our recruitment practices activities and references related to our climate survey.

Other Collaborators or Contacts

Kate Scantlebury, University of Delaware, is our external evaluator for program assessment.

Activities and Findings

Research and Education Activities: (See PDF version submitted by PI at the end of the report)

Research and Education Activities:

The Alliance for the Advancement of Florida's Academic Women in Chemistry and Engineering (AAFAWCE) NSF ADVANCE-PAID program is a consortium of five Florida state universities: University of South Florida (USF), Florida State University (FSU), the University of Florida (UF), Florida Agricultural and Mechanical University (FAMU), and Florida International University (FIU). USF is the lead institution of the AAFAWCE NSF ADVANCE-PAID collaboration.

USF offers 232 degree programs at the undergraduate, graduate, specialist and doctoral levels, including 89 bachelor, 97 master, two education specialist, 36 research doctoral, and four professional doctoral programs.

FSU was founded in 1851 and is the oldest university in the State of Florida. FSU is a comprehensive university with graduate, undergraduate, and professional programs, including medicine and law, currently enrolling more than 41,000 students.

FAMU, established in Tallahassee in 1887, is a land-grant historically black university. FAMU has 12,261 students enrolled in 13 colleges and schools with a total of 640 faculty members.
FIU is an urban, multi-campus, research university serving South Florida, the state, the nation, and the international community. The university emphasizes research as a major component of its mission and has attained Research 1 status within its short history.
UF is a major public, comprehensive, land-grant, research university. The state's most comprehensive university, UF, is among the nation's most academically diverse public universities.

OVERVIEW OF THE AAFAWCE COLLABORATION

AAFAWCE's primary goals and objectives are the recruitment of women faculty, the mentoring and advising of academic women at the assistant and associate professor levels, and the development of leadership among academic women faculty. To that end, the project PIs and Co-PIs have engaged in activities collaboratively across the five universities and individually on each campus. The PI coordinates the interuniversity collaboration-wide activities using various means of communication to provide common information to all five campuses and disseminate information to the administrators, and faculty of each campus. Many of the campus activities are common to all of the AAFAWCE campuses; however, true to the spirit of the PAID mission, several activities are unique adaptations for a specific campus. These multi-level activities are discussed below.

Interuniversity Collaboration-wide Activities

1) Hosted by USF, the AAFAWCE team holds a weekly conference call with the representatives of the five collaborating Florida universities to discuss and planned ADVANCE-PAID activities. These weekly meetings are an essential element in the development of our partnership and the coordination of our collaborative efforts. The meetings serve to help us with any of the challenges we may be facing on our campuses, and to provide ideas for the successful implementation of a variety of tasks. Also during these calls, we discuss and develop the collaboration timeline, the presentations, and the upcoming campus activities.

2) The AAFAWCE team uses email and FSU Blackboard (a common, private platform for document sharing, discussion boards, email, and surveys) to communicate and share documents, update a reference list (developed by Gilmer and Safron) and hyperlinks to books and research articles on women in the sciences and engineering, focused on AAFAWCE's goals. FSU provides the AAFAWCE team the AAFAWCE Blackboard site, and USF provides and maintains the public AAFAWCE Web site.

AAFAWCE Collaborative Activities

1) The AAFAWCE team designed and disseminated its second newsletter in Fall 2011. This newsletter included articles on 1) the upcoming COACh workshop (hosted and sponsored by FAMU, AAFAWCE), 2) AAFAWCE recruitment and mentoring activities, 3) advancement of STEM women into leadership positions, and 4) 2009 vs. 2010 chemistry and engineering faculty demographic data.

2) AAFAWCE sponsored a COACh leadership workshop in Tallahassee, February 23rd to 24th, 2012. STEM women faculty from the five AAFAWCE institutions attended workshop, which was hosted by FAMU (workshop details below).

3) On February 23rd, 2012, prior to the COACh leadership workshop, the FAMU AAFAWCE team hosted a meeting with the PIs and Co-PIs of the five collaborating Florida universities in in Tallahassee. The following items were discussed:

a) The timeline of ADVANCE-PAID activities
b) Upcoming campus activities at each institution
c) The ADVANCE-PAID publication based on our activities

4) The AAFAWCE team developed a book proposal and received a book contract from SENSE Publishers. The book will be submitted for editing and publication in the next year.
5) The AAFAWCE team collected chemistry and engineering faculty demographic data from the five universities, which are analyzed at the end of the Activities section.
6) The AAFAWCE team designed a research project to learn more about the isolation and career development of women STEM faculty. The final 15 interviews will be conducted in Fall 2012. This research will result in a scholarly publication. The preliminary findings are presented in the 'Major Findings' section below.
7) The AAFAWCE team led by Dr. Will Tyson is authoring a scholarly publication based on its climate survey findings.

Nationwide Collaboration

The AAFACWE team collaborated to make the following contributions to the NSF Joint Annual Meeting, Washington D.C., June 12th to 15th 2012:

1) Dr. Gilmer presented on the AAFAWCE collaboration in the session, 'Building Networks and Communities,' 2:00 p.m. to 3:13 p.m., Thursday, June 14th, 2012.
2) Drs. Smith, Gilmer, and Donnelly made the presentation 'Isolation and Women STEM faculty,' 10:30 to 11:30 a.m., Friday, June 15th, 2012.
3) Drs. Smith, Gilmer, Borman, and Donnelly presented a poster focusing on AAFACWE's mentoring activities and the preliminary findings of interviews conducted with STEM women faculty on isolation and career development.

Campus-level Activities

USF Campus Activities: We had activities in A) recruitment and B) mentoring.

A) USF Recruitment Activities
The USF AAFAWCE Recruitment Practices Committee has the following members: Dr. Venkat Bhethanabotla (Chemical and Biomedical Engineering), Dr. Brian Space (Chemistry), Eva Fernandez (Senior Personnel/Director of Engineering Experiential Learning), Dr. Ted Williams (Associate Vice-President, Diversity and Equal Opportunity Office), and Vanessa Martinez (Graduate Assistant). In Fall 2011, the USF AAFAWCE Recruitment Practices Committee presented on schemas and unconscious biases that influence people's decisions and on best recruitment practices to three faculty search committees in the College of Engineering and one search committee in the College of Arts and Sciences. Departments established these faculty search committees to hire assistant professors in their respective departments. We distributed the recruitment practices booklet designed by the USF AAFAWCE Recruitment Practices Committee to these search committees. The booklet includes the university's diversity statement, information on schemas and unconscious biases, appropriate interview questions, and a candidate evaluation tool.

B) USF Mentoring Activities:
The USF AAFAWCE Mentoring Committee has the following members: Dr. Sylvia Thomas (Co-PI, Electrical Engineering), Dr. Tammy Allen (Psychology), Dr. Will Tyson (Senior Personnel, Sociology), Dr. Christine Probes (World Languages), and Dr. Chrystal Smith (Postdoctoral Scholar/Project Manager). The Committee identified 12 senior STEM faculty members who agreed to mentor junior STEM women faculty. In addition, the committee sponsored the following events over the last academic year:

1. On Friday, November 4th, 2011, 9:30 a.m. ? 11:30 a.m., Dr. Howard Adams, a leading expert on mentoring and mentorship program development, facilitated a workshop titled, 'Mentoring and Professionalism within the Professoriate.' Approximately 23 faculty, administrators, and graduate students attended this workshop.

2. On Friday, November 4th, 2011, 1:00 p.m. ? 3:30 p.m., Dr. Kelly Ward, a leading researcher on family roles, careers, and community engagement, gave the presentation, 'Academic Careers and Motherhood: A Negotiable Road.' Approximately 12 faculty and graduate students attended this presentation.

3. On Thursday, February 2nd, 2012, 1:00 p.m. ? 3:30 p.m., Dr. Donna Dean, Past President, Association for Women in Science (AWIS), facilitated the workshop 'Using Mentoring and Networking to Develop Your Leadership Skills.' Approximately 26 faculty, administrators, and graduate students attended this workshop.

4. On Friday, April 13th, 2012, 3:00 p.m. ? 5:00 p.m., we held a Speed Mentoring event to provide mentors and prot?g?s with the opportunity to: 1) engage in time-efficient networking, 2) pose important questions about their research and careers, and 3) quickly identify a good mentoring match. Seven senior STEM faculty members participated as mentors and six junior women STEM faculty members participated as prot?g?s. The senior STEM faculty members received a letter of recognition from the Provost.

FSU campus activities:
Our emphasis this year at FSU was three-fold: A) develop a mentoring and networking program, B) provide ongoing support in leadership (both efforts for our academic women faculty in chemistry, physics and engineering), and C) raise awareness and educate faculty and staff at the National High Magnetic Field Laboratory on diversity for excellence in the workplace.

A) Mentoring and Networking
In the mentoring and networking program, we use the team model from Tina Reimers (developed from the ADVANCE program at University of Texas-El Paso) with two mentors and three prot?g?s per team, to meet at each program. New prot?g?s join our group, as the word gets around campus, so our teams are still changing. We have new mentors as well. We have a total number of prot?g?s and mentors that have attended from 18-26. We send surveys after each mentoring and networking event, to get feedback from the attendees and ideas of programs for the future.

1) So far we have tried two formats. Our first format involved a workshop on mentoring by AWIS Past President Donna Dean on February 3, 2012, with 11 prot?g?s, 10 mentors and five others attending. Dean taught our attendees the principles she has in her book for women in academia and industry, Getting the Most out of Your Mentoring Relationships: A Handbook for Women in STEM. During Dean's visit to FSU, we also provided a mentoring breakfast for women graduate students and postdoctoral fellows from FSU and FAMU to meet her and ask her questions.

2) For our second mentoring and networking program, on April 5, 2012, we had nine prot?g?s and six mentors, with the PI and two of the three co-PIs of ADVANCE-PAID also attending. Two prot?g?s who had attended the COACh leadership workshop presented oral summaries of aspects of the workshop that were particularly meaningful to them. Our Provost Garnett Stokes (co-PI on this project) was our keynote presenter on STEM women in academia. We had a session with wide-ranging and open discussion, including work-life balance, after Stokes' presentation.

We plan to have mentoring and networking meetings every other month in our no-cost extension year.

B) Provide ongoing support in leadership: 1) Marie Curie Centennial Celebration, and 2) participation in COACh workshop.

1) In November 2011, FSU AAFAWCE hosted the Marie Curie Centennial Celebration. AAFAWCE and the Florida State University Libraries collaborated on this two-day event. Keynote speaker, Dr. Julie des Jardins, gave a talk based on her 2010 book, The Madame Curie Complex: The Hidden History of Women in Science. Many interested students and faculty heard Dr. Jardins speak not only about Marie Curie and her life as a woman scientist but also about issues related to being a woman in science today, based on the history of women in science.

The second day of this Curie event featured a panel of five physical scientists who discussed careers in chemistry and physics for undergraduate and graduate students. This event brought together many people with the common goal of increasing diversity and the number of women in science.

2) For the collaborative COACh workshop on leadership, sponsored by FAMU, in February 2012, 13 of the 35 participants who attended the event were FSU women. One co-PI attended the COACh workshop associated with a physics annual conference she was attending.

C) Raise awareness and educate 1) faculty and staff at the National High Magnetic Field Laboratory (NHMFL) and 2) faculty search committee in Chemistry and Biochemistry, on diversity coupled with excellence in the workplace and recruitment of women academics in STEM departments.

1) In March 2012, AAFAWCE sponsored a third (Faculty Recruitment for Excellence and Diversity) (FRED) training at the NHMFL to present strategies for recruiting scientists to improve diversity and excellence. FSU PI Gilmer adapted the presentation from the STRIDE ADVANCE team from the University of Michigan. Twenty members of the faculty and staff at the NHMFL participated in the training. For a break-out session, we divided those present into groups of four or five people to provide an opportunity to discuss scenarios and brainstorm strategies to minimize evaluation bias or other difficulties during the recruitment process. Many of the attendees were interested in a) the legal questions that a committee member or other faculty may ask a candidate and on b) unconscious biases and schemas. Based on a survey collected during the

workshop, a majority of the attendees believed the training to be helpful and believed that it increased their understanding of faculty recruitment for excellence and diversity.

As a result of these AAFAWCE-sponsored events, the NHMFL now has a link within their web site focused on diversity: http://www.magnet.fsu.edu/about/howwework/diversity/index.html for the full listing of programs. At this site, users may download the PowerPoint used in the FRED presentation and see a list of the research articles used to prepare the presentation. Users can download and read the research articles or summaries of the articles (provided by Dr. Roxanne Hughes, the NHMFL Director of the Center for Integrating Research and Learning). This site demonstrates the focused effort of the NHMFL to increase diversity with their diversity action plan, list of diversity committee members, other resources, college outreach, dependent-care travel grants, and the FRED program (visit http://www.magnet.fsu.edu/about/howwework/diversity/fred.html). All NHMFL scientists and engineers serving on Search Committees for STEM positions will be required to complete FRED training.

2) Dr. Gilmer also met with the faculty search committee of the Chemistry and Biochemistry Department where she gave a presentation and answered questions on excellence and diversity in faculty recruitment.

UF campus activities:
This year UF hosted the ADVANCE Mentoring Luncheons. Senior faculty from Chemistry, Physics and Engineering who agreed to be ADVANCE mentors met with junior female faculty and discussed the program and issues of concern. A key issue participants identified was work-life balance. In the spring meeting, one of the junior faculty members who attended the spring COACh leadership workshop made a presentation about the workshop to those who were unable to attend.

Prior to the third luncheon, we surveyed junior faculty to determine how the meeting could best meet their needs. The responses indicated that they valued the luncheons and the opportunity to meet with the senior faculty mentors. The responses solicited by the survey will guide programming for future meetings.

When asked if they valued the ability to have a mentor outside of their department comments included:

'Yes ? a different perspective from outside the area helps.' 2. 'Yes, although I do not have one, sometimes the relationship with an outside mentor might be more sincere as the mentee does not feel dependent on the mentor especially when it comes to tenure.' 3. 'Yes, I do think it is useful to have a mentor in both the department and outside. Mentors outside the department may have different views on things.' 4. 'Absolutely, YES. This is a very nice opportunity to be mentored by someone not directly involved in your department, I allows for my freedom to discuss issues with someone not inverted in your department. I also think it allows you to speak more candidly than you would to a senior member of your department.'

Suggestions for future topics included:

A mentor speaking about the experience they have had mentoring junior faculty 2. What other universities do to support women in their careers. 3. Hearing other's success stories and how they balance family and work can be very helpful.

When asked if there were any activities/programming/opportunities that we could provide that would help them as they progress in their careers, they suggested:

'More interactions with mentors or peers.' 2. 'I think that a lot can be learned from the women that are leaving the university (willingly or not). Probably an exit interview can reveal some of the problems and what can be done better.' 3. 'I do believe that meeting other female faculty is always good, so that you can build a support system. Meeting other people and increasing your professional network also helps (and it may be particularly important to meet and get to know people from the upper administration).' 4. 'Nope, I think what you are doing now is great. You are providing lots of opportunities for the junior women faculty and I hope to attend more events in the future.'

Additionally, this year UF sent junior faculty to the ADVANCE-sponsored COACh leadership workshop in Tallahassee.

FAMU campus activities:

FAMU hosted the 1.5-day Spring 2012 AAFAWCE COACh Workshop, 'Uses of Influence, Power, and Conflict Resolution in Negotiation.' FAMU-FSU College of Engineering at the Challenger Learning Center and the Hotel Duval, Tallahassee:
http://www.eng.fsu.edu/~peterson/AAFAWCE/
The two workshop facilitators, Barbara Butterfield and Jane Tucker, designed this workshop to build on our learning from 'COACHing Strong Women in the Power of Strategic Persuasion'; however, participation in this earlier workshop was not a prerequisite. The workshop facilitators

have over 60 years of combined experience in higher education, and conducted numerous workshops on Negotiation and Networking.
All participants received a workbook containing information and worksheets on:
1. Negotiations, Problem Solving and Conflict Resolution
2. Influence, Power and Politics: Alignment and Decisions
3. Social Intelligence
4. Networking
5. Attracting and Retaining Women Faculty
6. Building High Performance Teams
7. Assessment of Response/Negotiating Styles
8. Difficult Conversations
9. Case Studies

Copyright did not allow posting of this workbook in the AAFAWCE website.
Thirty-four representatives from the five AAFAWCE campuses participated in the 2012 COACh Workshop (FAMU-6, FIU-4, FSU-13, UF-1, USF-10). Participants included Assistant, Associate, and Full Professors, Instructors, Postdoctoral Scholars, Campus Administrators, and Instructional Coordinators. Participants were from Chemistry, Engineering, Physics, Biomedical Sciences, Scientific Computing, Medicine, Social Work, Anthropology, and Academic Affairs. The workshop provided the participants from the five campuses time to network, establishing new contacts and to strengthen existing relationships. Attendees well rated the workshop, with participant's average ratings of all areas of the workshop between 5.35 and 5.90 (out of 6).

FIU Campus Activities:

1. We initiated mentoring/team building/inclusion strategies for women in research activities.
2. We formed focus groups, including women faculty, in various areas of engineering.
3. Four faculty members participated in the ADVANCE COACh Leadership workshop in Tallahassee.
4. In Fall 2012, we will conduct a virtual symposium on Goal Setting and Achieving for women in engineering using the go-to-meeting format. Three to four speakers will be invited and participants joining remotely will be able to ask questions. Based on the interest level, follow-up, web-based seminars will be conducted.
5. Two panel meetings on mentoring and professional development for women in engineering will be held during the Fall and Spring semesters. Panelists will include administrators (i.e., dean, chairs, faculty) who will make brief presentations while answering questions given to them. In addition, participants will have the opportunity to ask questions. At the end of the meeting, strategies will be developed based on the experiences and information provided.

ANALYSIS OF FACULTY DATA

In the academic year August 2011 to May 2012, the AAFAWCE team collected instructional faculty data from the chemistry and engineering departments at the five collaborating institutions. In total, there were 838 chemistry and engineering faculty. Of the 643 engineering faculty, 394 (61 percent) were tenured, 121 (19 percent) were tenure track, and 128 (20 percent) were non-tenure track. Of the195 total chemistry faculty, 120 (61.5 percent) were tenured, 28 (14.4 percent) were tenure track, and 47 (24.1 percent) were non-tenure track. Compared to previous years, the total number of chemistry and engineering faculty in year three has grown by 16 since the 2009-2010 academic year and by 30 since the 2010-2011 academic year.

In chemistry, the percentage of tenured faculty has fluctuated from 59 percent in year one and 58 percent in year two, to 62 percent in year three. Tenure track chemistry faculty fluctuated from 17 percent in year one to 20 percent in year two, and then fell to its lowest percentage in the grant period to 14 percent of the total faculty in year three. The percentage of non-tenure track chemistry faculty decreased from year one (24 percent) to year two (22 percent), but then increased to 25 percent in the third year of the grant.

Engineering faculty saw similar fluctuations. The percentage of tenured engineering faculty was 62 percent in year one, 60 percent in year two, and 61 percent in year three. As in chemistry, tenure track engineering faculty saw its lowest percentage this year (year three, 19 percent), compared to 20 percent in year two and 22 percent in year one. The percentage of non-tenure track engineering faculty remained at 20 percent since year two, an increase of 4 percent since year one.

In addition to these findings, analysis of these data found gender and ethnic differences among both the chemistry and engineering faculty at the consortium institutions. Please note that attached to this activities section is a file with the figures and tables that correspond to the analysis of these faculty data.

Tenure Status and Gender Analysis of Chemistry Faculty

The faculty demographic data collected by the five collaborating AAFAWCE institutions demonstrate that there were lower percentages of women tenured in chemistry compared to men in the academic year of August 2011 to May 2012. A review of the tenured chemistry faculty by institution found that tenured male faculty represented 40 to 66 percent of the total faculty. Contrary to last year, percentages of tenured male chemistry faculty at USF, FIU, and UF decreased by 1.8 to 9.4 percent, while percentages of tenured male faculty at FSU and FAMU both increased by approximately 11 percent (data not given for 2010-2011 academic year in this report, but present in last year's report).

As in years one and two, percentages of tenured female chemistry faculty remained lower than the percentages of tenured male chemistry faculty by 20.0 to 62.5 percent. Notably, FAMU saw a sharp increase in tenured female faculty from year two to year three (7 percent to 20 percent, respectively). UF too, saw an increase in tenured female chemistry faculty, from 8 percent in year two to 12.8 percent in year three. USF and FSU tenured female faculty remained at approximately 6 percent and 11 percent, respectively, over years two and three of the grant. The percentage of tenured female faculty at FIU remained at approximately 3 percent. Consistent with years one and two, FIU continued to have the lowest percentage of tenured female chemistry faculty among the five AAFAWCE institutions. See Figure 1.

Over the last year, percentages of tenure track men in chemistry decreased at USF (19 to 17.6 percent), FAMU (14 to 0 percent), FSU (24 to 13.9 percent), and UF (14 to 11.5 percent). Notably, percentages of tenure track male faculty at both FAMU and FSU dropped by approximately 10-14 percent. Only at FIU, did the percentage of tenure track male faculty increase from year two to year three (3 to 9.4 percent).

Percentages of tenure track female faculty in chemistry from year two to year three saw no change at USF (3 percent), but at FIU increased (6 to 9.4 percent), but decreased at UF (4 to 1.3 percent) and FAMU (21 to 0 percent). At FSU, the percentage of tenure track female faculty remained at 0.0 percent. Notably, FAMU again saw the most dramatic drop in women tenure track chemistry faculty among the five AAFAWCE institutions (21 percent drop from year two to year three). See Figure 2.

At the non-tenure track level, male faculty in chemistry increased at four AAFAWCE institutions. The most dramatic increase was at UF (from 4 percent in year two to 21.8 percent in year three, a 17.8 percent increase). FAMU's non-tenure track male faculty increased by 6 percent, to 20 percent of the total faculty. USF, non-tenure track male faculty increased from 17 percent in year two to 20.6 percent in year three. At FIU, the percentage of non-tenure track chemistry male faculty increased by 0.3 percent. FSU showed decreases in non-tenure track male faculty (from 11 percent in year two to 8.3 percent in year three, a 2.7 percent decrease).

Percentages of non-tenure track female chemistry faculty increased at two out of the five AAFAWCE institutions. At UF, the number of women at the non-tenure track level increased from 4.0 percent (year two) to 6.4 percent (year three). Similarly, FAMU showed an increase in non-tenure track women from 14.3 percent in year two to 20.0 percent in year three. FIU and FSU non-tenure track female faculty remained the same at 6.3 percent and ~2.7 percent respectively in years two and three. USF showed a decrease in the percentage women in non-tenure track: 13.9 percent in year two to 11.8 percent in year three. See Figure 3.

The greatest disparities among male and female chemistry faculty this year were at FIU (65.6 percent male, 3.1 percent female) at the tenured level, at FSU (13.9 percent male, 0.0 percent female) at the tenure track level, and at UF (21.8 percent male, 6.4 percent female) at the non-tenure track level. In all, women continued to be underrepresented at these institutions at all faculty levels as indicated in Figures 1 to 3.

Tenure Status and Gender Analysis of Engineering Faculty

Consistent with the data collected by AAFAWCE from its chemistry departments, data collected from the colleges of engineering at all four institutions revealed disproportionately low numbers for female faculty versus male faculty. Please note that FSU and FAMU have a joint college of engineering.

Compared to last year, tenured male faculty decreased at three of the four AAFAWCE institutions (at FAMU/FSU by 4.5 percent, at FIU by 0.5 percent, and at UF by 2.7 percent). Only at USF did the percentage of tenured male faculty increase (by 11.8 percent).

Percentages of tenured female faculty in engineering remained the same from year two to year three at FIU and UF (~5 percent of the total faculty), decreased at FAMU/FSU (by 0.8 percent), and doubled at USF (from 4.0 percent in the 2010-2011 academic year to 8.1 percent in the 2011-2012 academic year). See Figure 4.

Between years two and three of the grant, the percentage of tenure track male faculty in engineering decreased at FAMU/FSU, UF, and FIU (by 2.5, 2.8, and 0.5 percent, respectively), but increased at USF (by 11.8 percent).

The percentage of tenure track female faculty in engineering increased slightly at three out of four of the AAFAWCE institutions: at FAMU/FSU by 0.1 percent, at FIU by 0.7 percent, and at UF by 0.8 percent. Only at USF did the percentage of tenure track female faculty in engineering decrease (by 1.4 percent). See Figure 5.

Compared to last year, the percentage of non-tenure track male faculty in engineering dropped dramatically at USF (from 23 to 7.2 percent). At FIU too, the percentage of non-tenure track men dropped from 24 to 19.2 percent over the last year. At FAMU/FSU and UF, percentages of non-tenure track men rose from 13 to 21.6 percent and from 11.7 to 16.2 percent, respectively.

Percentages of non-tenure track women in engineering fell at USF and FIU, from 4 to 2.7 percent and from 7 to 5.8 percent, respectively. At FAMU/FSU the percentage of female non-tenure track faculty in engineering increased from 3 to 3.8%. At UF, the percentage of non-tenure track female engineering faculty increased from 2.4 to 3.8 percent. See Figure 6.

As displayed in Figure 4, we found the greatest disparity between men and women engineering faculty at the tenured level at all four colleges of engineering. The percentages of tenured male faculty (of the total faculty) ranged from 47.5 to 60.3 percent, while the percentages of tenured female faculty ranged from only 4.8 to 8.1 percent. At the tenure track level, women continued to be underrepresented at all four colleges of engineering. Tenure track women made up 1.7 to 4.1 percent of the total engineering faculty, compared to men who accounted for 11.1 to 21.6 percent of the total engineering faculty, as displayed in Figure 5.

Figure 6 indicates that at the non-tenure track level, men continued to be represented in substantially higher numbers than women again at all four colleges of engineering. Of the total faculty in the colleges of engineering at these institutions, 7.2 to 21.6 percent were non-tenure track men, while 2.7 to 5.8 percent were non-tenure track women.

Ethnic Analysis of Chemistry Faculty

The faculty demographic data collected by AAFAWCE demonstrate that the highest percentage of minority faculty in the academic year of 2010-2011 is at FAMU, a historically black university. The disparity between men and women who are ethnic minority faculty in chemistry is, however, still substantial at FAMU, and at the other four AAFAWCE institutions.

Tables 1 to 4 indicate that at FIU, UF, USF, and FSU, white tenured men made up the greatest percentage of the total faculty in chemistry (29.4 to 55.6 percent). White tenured women, on the other hand, accounted for only 3.1 to 9.0 percent of these departments' faculty.

For all ranks, both men and women, FIU and FSU have no black faculty. USF and UF each have one black faculty member, one non-tenure track man (2.9 percent of the total faculty), and one tenured woman (1.3 percent of the total faculty), respectively. FAMU had the highest number and percentage of black faculty (73 percent of the total faculty), including 7 men (6 tenured, 1 non-tenure track), and 4 women (2 tenured, 2 non-tenure track). Notably, the number of black tenured men in chemistry at FAMU is three times greater than the number of black tenured women in that department.

At all five institutions, Hispanic chemistry faculty is represented in similarly disproportionate numbers (compared to white faculty) as black faculty. Hispanic men represent ≤ 9.4 percent of the total chemistry faculty of any institution, while Hispanic women represent ≤ 5.9 percent of the total chemistry faculty of any institution. FIU, a Hispanic serving institution, had the highest percentage of Hispanic male faculty (9.4 percent), all of whom were tenured. Notably, however, they had no tenured Hispanic women, and no tenure track Hispanic women. FAMU had no Hispanic faculty in chemistry.

Of the minorities examined in this study, Asian men at UF, USF, FIU, and FSU had the highest representation, 11.5 to 24.5 percent of the total chemistry faculties at these institutions. Asian women, on the other hand, represented only 1.3 to 7.5 percent of the total faculties. FAMU had no Asian male faculty, but had one non-tenure track Asian woman.

Ethnic analysis of engineering faculty

Tables 6 to 9 show that white tenured men made up 17.5 to 33.3 percent of the total faculty in engineering at these four institutions, while white tenured women made up only 1.7 to 3.6 percent. Compared to last year, the percentage of tenured white men fell by 2.9 percent to 8.2 percent, while the percentage of white tenured women has risen by up to 0.9 percent. At USF, UF and FIU, black tenured men made up only 1.8 to 3.3 percent of the total engineering faculty while black tenured women made up less than one percent of these faculties. Notably, the FAMU-FSU College of Engineering had a higher percentage of black tenured men (12.4 percent), however, the percentage of black tenured women was only 1.0 percent (See Table 8). Compared to last year, there was little or no change in the percentages of black tenured faculty.

Hispanic tenured men at these four institutions made up 1.0 to 3.6 percent of their total faculties, while Hispanic tenured women made up 0.0 to

2.7 percent of their total engineering faculties. Compared to last year, percentages of Hispanic tenured men showed little or no change, except at FIU, where the percentage dropped from 4.2 to 3.3 percent of the total faculty. The percentage of tenured Hispanic engineering women changed only at USF, where it increased from 1.4 to 2.7 percent.

Tenured Asian men made up 18 to 20 percent of the engineering faculties at these four institutions, while tenured Asian women made up only 0.9 to 3.3 percent of their respective faculties. The percentage of tenured Asian men decreased from year two to year three at FAMU/FSU by 1.6 percent, but increased at USF and UF by 3.6 and 0.5 percent respectively, with no change at FIU.

The percentage of tenured Asian women during this time did not change at FAMU/FSU or FIU. However, at USF, tenured Asian women increased from 0.7 percent to 0.9 percent. Likewise, UF showed an increase of Asian tenured women from 1.7 percent to 1.9 percent from year two to year three (data not given for 2010-2011 academic year in this report, but present in last year's report).

Summary of demographic data in chemistry and engineering

These data indicate that the percentages of ethnic minority female faculty in chemistry and engineering at these institutions continue to be underrepresented at all levels compared to men. See Tables 1-9. Percentages of minority faculty, both men and women, in chemistry and engineering, have remained approximately the same since last year (data not given for 2010-2011 academic year in this report, but present in last year's report).

Findings: (See PDF version submitted by PI at the end of the report)

Introduction

Isolation is one of the most significant issues or challenges facing women scientists as they plan their careers. In addition to the literature, the findings of our climate survey and conversations with women STEM faculty during grant activities influenced our decision to conduct further qualitative research, i.e., semi-structured interviews on this important issue.

Research Questions:

1. What are the factors that contribute to the feelings of isolation reported by women STEM faculty?
2. How do women STEM faculty overcome their feelings of isolation and successfully advance their careers?

Sample

We drew our sample from women STEM faculty employed at the five AAFAWCE institutions. In total, we intend to conduct semi-structured interviews with 30 women STEM faculty members, five from each of the five AAFAWCE institutions. We have interviewed 15 women so far, and we present our preliminary findings here.

Methodology

AAFAWCE designed and collaboratively reviewed semi-structured interview protocols. Dr. Smith, a sociocultural anthropologist with extensive experience in qualitative research, conducted the interviews with women STEM faculty participants. We recorded the interviews using a digital recorder and had them transcribed. Ms. Martinez, AAFAWCE graduate assistant, later coded the interview transcripts by entering the data in to ATLAS.ti 6, and analyzing them for thematic analysis.

Preliminary Results

Participant Characteristics:

Of the 15 women interviewed, 47 percent were tenured, 20 percent were tenure track, and 5 percent were non-tenure track. While the sample was ethnically diverse, most of the women were married (80 percent) (see Table 1 attached to this section).

Themes Identified:

Three major themes emerged from the preliminary analysis of the interviews (see Table 2 attached to this section):

1. Lack of mentoring
2. Negative or limited experience with networking and collaboration
3. Gender bias in the work environment

1. Lack of Mentoring:

Out of the 15 STEM women faculty interviewed, none of the participants reported having an assigned mentor. Rather, most reported having established a variety of informal mentoring relationships with senior faculty and colleagues who were friends, both from inside and outside of their departments and/or universities. One such faculty member gave the following reasons for taking the initiative to find her own mentor: '?having a mentor is essential in our career because there's so many times that you need experience and we just don't know... can I make a decision just based on the information that I have? and the answer is no, I need the history, you know, I need someone who has been there to tell me, you know, this is the best way to do it, this is the wrong way to do it? this is what you know is going to happen, if you do this?'

Another interviewee gave the following example of her experiences with informal mentoring:

'?there's no official mentorship relationship set up in our department? it's more like volunteering doing something. Like for instance [name] when he was promoted to associate professor recently about one year ago when we were talking and he said, hey, if you have any questions regarding tenure promotion talk to me because I just went through the process. So anything, the colleagues are very nice, you know if I have questions I can go to talk to them...'

Three women reported having neither formal nor informal mentors. The following quotes convey the difficulties they have faced and continue to face in the absence of guidance:

'? I haven't been mentored so I had to find things out all by myself and sometimes I wish that, that I would've had somebody but it wasn't like that, I just got put in and nobody mentored me at all so that's not good? I just figured out how to do things myself but it would've made a big difference. You know, somebody telling you, this is what you have to do, this is the next step, I never had that.'

'?I was put on a lot of service committees in the beginning, I did not know how to say no? I never knew that I could say no. There was nobody? from the senior faculty who could help me out and step to my chair and say like, look, this is a junior faculty, she needs to do research, she needs to do some teaching, but nobody stepped up for me, so you were all by yourself?'

'? even at this point I feel that I'm still, I mean I wish to mentor those who come after me, but perhaps I'm still needing somebody, right? A mentor to be able to assist me in any ways, in trying to overcome the not being able to balance classes and being able to, you know, to get through a proposal which would be my first in this medium.'

Overall, the participants strongly believed that mentoring would be positive to their career development.

2. Negative or limited experience with networking and collaboration:

Out of 15 participants, only three women report positive networking and/or active collaboration with departmental colleagues, while 12 reported either limited or negative experiences in such activities. The interview data reveal that networking and collaboration within departments are more likely to occur when there are faculty members whose research areas are similar, while departments with faculty diverse in research areas (as well as in ethnicity and age) prove more difficult in creating a climate for collaboration. Some participants even admitted that networking was a personal weakness: '?that was one of the things, one of the weak items that I discovered from the workshop? networking? it's not my strong point.'

The following quote illustrates the difficulties some faculty face:

?'so I'm working on biomedical imaging, the next door guys are working on astrophysics, someone else is working on biology, another one is working in hydrology, we have people who work in forensics, so I just have a broad idea of what these areas are and therefore collaborations are very difficult to establish.'

Although men faculty may also face similar challenges, limited networking and collaboration are more detrimental to women STEM faculty in that it can contribute to their feelings of isolation in the department and affect their advancement.

In contrast to these findings, 11 women reported active and positive networking and collaboration with faculty outside of their department

and/or university. Although some reported actively pursuing such activities at their institutions, many cited national and international conferences as the origins of collaborative relationships.

3. Gender bias in the work environment:

Five of the 15 women experienced, witnessed or were personally affected by gender bias in their departments. One woman stated:
'?there are some colleagues that are, like, well they are very disrespectful, we have open lab spaces over here so everybody needs to like keep up with the space areas and sometimes a few of the colleagues just don't listen. They leave the garbage because they think like well we are females and we can clean it up for them so we had a few conflicts about that like one of our cleaning ladies over our male colleagues and it's kind of very sexist and I think it's very big of a problem.'

Another woman reported:
'? I learned to be non-confrontational because this environment, which is only male, is not tolerating confrontation of women, and many females I've seen in the past might not make it. I've seen this in engineering, tenure or promotion.'

One woman stated:
'The male faculty is better paid. It's unacceptable that you have female faculty being paid as the lowest. I approached the chair and I told him that I'm paid at the lowest level, that even male faculty make fun about it and say 'you have so many accomplishments, you're paid at the lowest level? you have three books, you have most publications in the department'? this is not a good example having women paying the lowest...'

Participants who reported gender bias suggested that it was pervasive and that they were uncertain about how to address these incidents when they occurred.

Discussion

We found that these factors contribute to feelings of isolation: lack of formal mentoring, inadequate collaboration/networking and gender bias.

The strategies that women reported using to break their isolation include:
1. Establishing informal mentoring relationships with senior colleagues.
2. Collaborating with colleagues in other departments and/or colleagues that they meet at professional conferences.

Institutions need to address factors that contribute to the isolation of STEM women faculty by:

1. Implementing formal mentoring programs (when they do not exist)
2. Supporting collaboration/networking opportunities

The most difficult factor to address is gender bias, which requires structural change, i.e., institutional transformation, e.g., implicit bias training for chairs and other leaders.

Our recommendations to address STEM women's isolation include:
1. Create and support development of women scientists' and engineers' positive collective identity
2. Make connections between individual's personal experiences and policies and practices in the institution
3. Support change-focused alliances of women and men by creating meaningful avenues for concrete action

Training and Development:

Dr. Chrystal Smith, the postdoctoral scholar on this award, has been mentored by 1) Dr. Kathryn Borman (USF), 2) Dr. Penny Gilmer (FSU), and 3) Dr. Simone Hruda (FAMU) who have committed to guiding Dr. Smith's research and administrative skills as she acts as project manager. They have also provided mentorship on strategies to advance her academic career.

Vanessa Martinez, a second year Master's degree student in Applied Anthropology at USF, is the graduate research assistant on this award. Under Dr. Smith's guidance, Ms. Martinez furthered her research skills by analyzing the project's interview data, as well as the AAFAWCE faculty data, including the creation of related graphs and tables.

Outreach Activities:

The USF AAFAWCE team designed a poster on its ADVANCE-PAID activities, which was presented at the USF Postdoctoral Research Colloquium on November 18th, 2011. University administrators, faculty and postdoctoral scholars attended this event from STEM departments, as well as members of the general public.

Journal Publications

Books or Other One-time Publications

Web/Internet Site

URL(s):

AAFAWCE Web site: http://anthropology.usf.edu/advancepaid/; http://www.eng.fsu.edu/~peterson/AAFAWCE/

Description:

The AAFAWCE Web site provides information about its ADVANCE-PAID collaborative team, mission statement, project activities, and resources. The resources include a list of and hyperlinks to books and research articles on women in the sciences and engineering compiled by Gilmer and Safron at FSU.

FAMU COACh Workshop Web site (
http://www.eng.fsu.edu/~peterson/AAFAWCE/)
was created to provide participants details on the conference.

Other Specific Products

Product Type:

Audio or video products

Product Description:

USF: The USF AAFAWCE team video-recorded the USF AAFAWCE Mentoring workshops and presentations and uploaded them to the AAFAWCE Web site (http://anthropology.usf.edu/advancepaid/resources/presentations/).

Sharing Information:

The URL of the USF presentations was sent to on the campus-wide faculty email list after each event so they could be easily accessed by those individuals who could not attend.

Product Type:

External evaluation report

Product Description:

Kate Scantlebury, the external evaluator from the University of Delaware has submitted the year 3 evaluation report, which is attached to this report.

Sharing Information:

The evaluation report will be disseminated to AAFAWCE institutions.

Contributions

Contributions within Discipline:

Mentorship and recruitment practices activities further AAFAWCE's mission to increase the representation and promote the advancement of academic women in chemistry and engineering by developing a more diverse science and engineering workforce.

Contributions to Other Disciplines:

Academic women from other STEM departments including physics, medicine, marine science, oceanography, and the National High Field Magnetic Laboratory at FSU have attended some of our AAFAWCE workshops and presentations.

Contributions to Human Resource Development:

The mentorship, leadership, and recruitment practices activities sponsored by AAFAWCE contribute to the human resource development of junior women faculty at all collaborating institutions.

Contributions to Resources for Research and Education:

Contributions Beyond Science and Engineering:

AAFAWCE's ADVANCE-PAID activities have contributed to the wider society by raising awareness and recognition of historically underrepresented groups, i.e., women and minorities who have traditionally been excluded from pursuing many disciplines in the sciences and engineering.

Conference Proceedings

Special Requirements

Special reporting requirements: None

Change in Objectives or Scope: None

Animal, Human Subjects, Biohazards: None

Categories for which nothing is reported:

Any Journal

Any Book

Contributions: To Any Resources for Research and Education

Any Conference

DRAFT

Annual External Evaluation Report, September 2012

For

ADVANCE PAID:
Alliance for the Advancement of Florida's Academic Women in Chemistry and Engineering (AAFAWCE)

Kathryn Scantlebury

Introduction

AAFAWCE is a consortium of five Florida institutions: University of South Florida, Florida State University, the University of Florida, Florida Agricultural and Mechanical University and Florida International University. Their main objectives in the project are "the recruitment of women faculty, the mentoring and advising of academic women at the assistant and associate levels, and the promotion of leadership among academic women" (Borman, Holbrook, & Thomas, 2009). The project plans to achieve these objectives by

1) providing opportunities, best practices and strategies for hiring women faculty in STEM fields.
2) providing opportunities, infrastructure, and resources for mentoring and advising assistant and associate professors.
3) increasing the number of women in chemistry and engineering by capitalizing on their leadership skills for career advancement and the attainment of leadership positions.

This report covers the project's activities from June 2011 to May 2012. During the third year, the project continued to collaborate and network between the institutions and disseminate information to the faculty and administrators at the campuses. Other activities included: a) the collection of demographic data about the chemistry and engineering faculty at each participating institution, b) one collaborative COACh (*Committee on the Advancement of Women Chemists*, on leadership and development) workshop for all institutions on leadership, c) three institutional workshops - two on mentoring at USF and FSU, and one at FSU on recruitment using materials and resources from other successful ADVANCE projects (University of Wisconsin-Madison WISELI (recruitment), University of Michigan STRIDE (recruitment), and SUNY- Albany (mentoring), d) the production of a newsletter and poster presentations at two national conferences (NSF's JAM and ADVANCE), e) the commencement of a research project focused on the isolation and career development of women STEM faculty to be concluded in the fall 2012, and f) the acceptance of a book proposal on the project's activities, research and outcomes.

This report provides an analysis of findings and a synthesis of the project's progress toward meeting its stated goals. The report is divided into five sections: (1) introduction; (2) review of project activities across sites and at specific sites; (3) review and synthesis of

responses to a questionnaire by faculty participating in project workshops; (3) review and synthesis of chemistry and engineering demographic data from the five institutions; and (4); summary and recommendations.

CROSS INSTITUTION PROJECT ACTIVITIES

AAFAWCE conducted weekly conference calls, offered workshops, hosted a Blackboard site for material and information dissemination, organized face to face meetings for PI's and Co-PI's, gave two presentations and delivered two posters at national meetings, produced and distributed newsletters and brochures, collected demographic data on the participating institutions' chemistry and engineering faculty (tenured and non-tenured), interviewed selected women faculty involved with chemistry and engineering departments at the participating institutions, and acquired a book contract from Sense Publisher to disseminate the project's outcomes. The next section summarizes the evaluation of the project wide workshops.

Workshops

AAFAWCE offered the workshop, "*COACh Leadership*", in Tallahassee, sponsored by FAMU, in February. All institutions involved with AAFAWCE sent representatives to the workshop. There were 35 attendees, 31 completed a workshop evaluation, summarized in Table 1. As shown in Table 1, participants gave high scores (maximum score =6 (strongly agree)) for each of the 14 evaluation items. Some of the comments provided by the participants included:

> *"We needed more time to discuss the ideas."*
>
> *"More time for activities. I would love for this to be a 2-day workshop."*
>
> *"Seeing we are a strong community."*
>
> *"Very friendly environment. Very helpful and informative."*
>
> *"I learned about asking specific ways to ask questions which are conducive to gaining information."*

Several respondents noted the value in learning from other female faculty, and saw positive, cross-institution, networking opportunities provided by the project. Respondents also recommended that the workshop become a part of their campus's career development programs. Other comments related to the physical space and environment.

Table 1

AAFAWCE's Participants' Evaluation Mean Scores on the *COACh Leadership* Workshop

	Question	Mean (n=31)	SD
1	The conference objectives were clearly stated.	5.71	0.45
2	The workshop objectives were met.	5.55	0.56
3	There were sufficient opportunities to ask questions.	5.67	0.70
4	There was sufficient time to ask questions.	5.57	0.76
5	There was enough time to learn the content.	5.35	0.78
6	The printed materials were helpful and supported my learning.	5.65	0.54
7	The COACh materials were easy to understand.	5.65	0.54
8	The audiovisual materials were used effectively in the workshop presentations.	5.61	0.61
9	The information presented will be useful to me as I proceed through my career.	5.68	0.47
10	The number and variety of activities were appropriate.	5.48	0.76
11	The COACh workshop facilitators encouraged the attendees to participate	5.87	0.42
12	The physical environment was conducive to learning (i.e., lighting, sound, temperature).	5.52	0.88
13	The technology equipment worked well.	5.90	0.30
14	The workshop worked well for the events I attended.	5.80	0.40

PROJECT ACTIVITIES – by Institution

This section reviews the ADVANCE-PAID activities by institution. Table 2 provides an overview of AAFAWCE activities by institution. The project's personnel also gave talks, conducted workshops, and mentoring/networking events on their campuses. In 2010-2011, campuses noted the establishment of committees to promote ADVANCE activities, for most campuses it was unclear from the report whether these committees had continued in 2011-2012.

Table 2
AAFAWCE Project Activities & Products by Institution

	USF	FSU	FIU	FAMU	UF
Committees					
Programming					
Mentorship	X				
Recruitment	X	X			
Leadership	X				
Mentoring					
Mentoring	X	X	X	X	X
Speed Mentoring	X				
Network/Mentoring		X			X
Luncheons		X			X
Focus groups			X		
Meetings					
Leadership		X			
Workshops					
Mentoring		X			
Mentoring and Professionalism	X				
Academic Careers and Motherhood	X	X			
Mentoring & Leadership	X	X		X	
Leadership		X		X	
Academic Careers & Work/Life Balance		X			
Recruitment		X			
Talks					
Recruitment Practices & Schema	X				
Academic Careers & Work/Life Balance				X	X
History of Women in Science: Marie Curie		X			
Products					
Power Point		X			

Evaluation of FSU Workshop

FSU personnel conducted a workshop, Faculty Recruitment for Excellence and Diversity (FRED), with the NHMFL (National High Magnetic Field Laboratory). The workshop had 20 participants and 14 answered the evaluation. Of those 14 participants, two were women, four were associate scholars/scientists and four assistant scholars/scientists. Two indicated their status as 'other'. Six has 1-5 years of experiences, two had 6-10 years, four had 11-15 years and two had over 15 years of experience. Twelve had never served on a search committee, two had chaired search committees, and one had served on more than one search committee.

Participants answered the questions using the following scale 1= not at all; 2= not really; 3= neutral; 4= somewhat and 5= very much. The mean and standard deviation on each question is shown in Table 3. Participants had the highest score (X=4.42, SD=0.85) on the questions, "How much has the workshop contributed to your understanding of *recruiting practices?"* and "How much has the workshop contributed to your understanding of *schemas?"*. The next two questions with the highest scores were: "*Did you understand how unconscious bias might affect recruitment and retention prior to the workshop*? and *"How much has the workshop contributed to your understanding of recruitment practices*? (X=4.21, SD=0.89). Participants had the lowest score on "*How well did you understand the recruitment process prior to today's workshop*? (X=3.43, SD=1.02).

Table 3
NHMFL Participants' Evaluation Mean Scores on the
FRED Workshop

	Question	Mean (n=14)	SD
1	How well did you understand the recruitment process prior to today's workshop?	3.43	1.02
2	How much has the workshop contributed to your understanding of the recruitment process?	4.43	0.85
3	Did you understand how schemas might affect faculty recruitment and retention prior to the workshop?	4.07	1.00
4	How much has the workshop contributed to your understanding of schemas?	4.43	0.94
5	Did you understand how unconscious bias might affect recruitment and retention prior to the workshop?	4.21	0.89
6	How much has the workshop contributed to your understanding of unconscious bias?	4.14	1.17
7	Did you understand how specific practices might affect recruitment and retention prior to the workshop?	3.86	0.66
8	How much has the workshop contributed to your understanding of recruitment practices?	4.21	0.89

Table 4 shows participants' mean scores on their perceptions of their improved understanding of workshop topics. Participants responded to the whether the level of their understanding had increased due to the workshop by indicating that it 1= remained unchanged, 2=increased somewhat and 3=increased greatly. As shown in Table 3, participants indicated that their understanding increased in all the topics covered in the workshop. Participants had the highest mean scores on the items "*Implementing an effective interview process"* (X=2.43, SD=0.76) and "*Evaluation process for candidate*" (X=2.36, SD=0.74).

Table 4

NHMFL Participants' Evaluation Mean Scores on the *FRED* Workshop

	Question	Mean (N=14)	SD
1	Running an effective search committee	2.07	0.73
2	Recruiting a diverse pool of candidates	2.29	0.83
3	Reading CVs and letters of recommendation	2.00	0.78
4	Constructing the finalist pool	2.14	0.66
5	Implementing an effective interview process	2.43	0.76
6	Evaluation process for candidate	2.36	0.74

To the question: "What component of the workshop will be most helpful to you and why?" Participants provided the following responses:

"Actually, most of it. Very informative"!
"Group discussion"
"Legal questions". Was unaware of the strictness of requirement., , ,
"The group sessions because a lot of good possible and workable ideas were brought up".
"Statistics and references",
"Schemas, the work in an unconscious way"

Participants noted the following as the least informative,

"Schemas-I have long been aware of their pervasiveness".

"The data of faculty demographic. I think everyone is aware of the discrepancies. What we need is solutions to have to address them".

Further comments solicited the following responses:

"Some diversity issue starts from earlier ages. So, bottom up approach should be considered in parallel".

"Might it be shortened or cut into two sessions? Short list of legal/illegal questions should be distributed to each search committee or reminder. UM form or similar adopted".

"Great program".

"Be aware that statistical data do NOT infer cause-effect relationships. But Models do infer! Ex: Student has increasing GPA over 4 years. USA debt is increasing over 4 years. Plot of linear, increasing slope, line. Neither points have correlation".

Summary

In the third year of the project, AAFAWCE continues to meet its goal to provide "opportunities, best practices and strategies for hiring women faculty in STEM fields" (goal 1) by increasing faculty and administrators' awareness through workshops, talks, brochures, and newsletters. Through the leadership events and on-going campus activities the project has met its second goal (providing opportunities, infrastructure, and resources for mentoring and advising assistant and associate professors).

The project has continued data collection to track its success on achieving the third goal (increasing the number of women in chemistry and engineering capitalizing on their leadership skills for career advancement and the attainment of leadership positions). The research project uses semi-structured interviews of selected women faculty to document their perspectives on isolation as an impediment to STEM careers. This aspect of the project has exceeded the original goals and provided important data and insights not only to the institutions involved but also other higher education institutions.

Project Leaders have weekly conference calls and the minutes of these meetings are available on the project's blackboard site. These regular meetings of key personnel have contributed to the project's success.

AAFAWCE Collaborative Research: Isolation and Women STEM Faculty

Preliminary Analysis

Table 1. Characteristics of Women STEM Faculty

Variables	N (%)
Tenure status	
Tenured	7 (47)
Tenure-track	3 (20)
Non-tenure track	5 (33)
Ethnicity	
White American	5 (33)
Asian/Pacific American	4 (26)
Latino/Hispanic American	3 (20)
Black/African American	2 (14)
Other	1 (7)
Marital status	
Married/Living with someone	12 (80)
Single/Never married	2 (14)
Divorced/Separated	1 (7)

Table 2. Themes Identified from Semi-Structured Interviews with Women STEM Faculty

Themes	N (%)
Mentoring	
Informal	12 (80)
No mentor	3 (20)
Formal	0 (0)
Networking/Collaboration	
Positive/Active	3 (20)
Negative/Limited	12 (80)
Gender Bias	
Yes	5 (33)
No	10 (67)

AAFAWCE Faculty Data Analysis

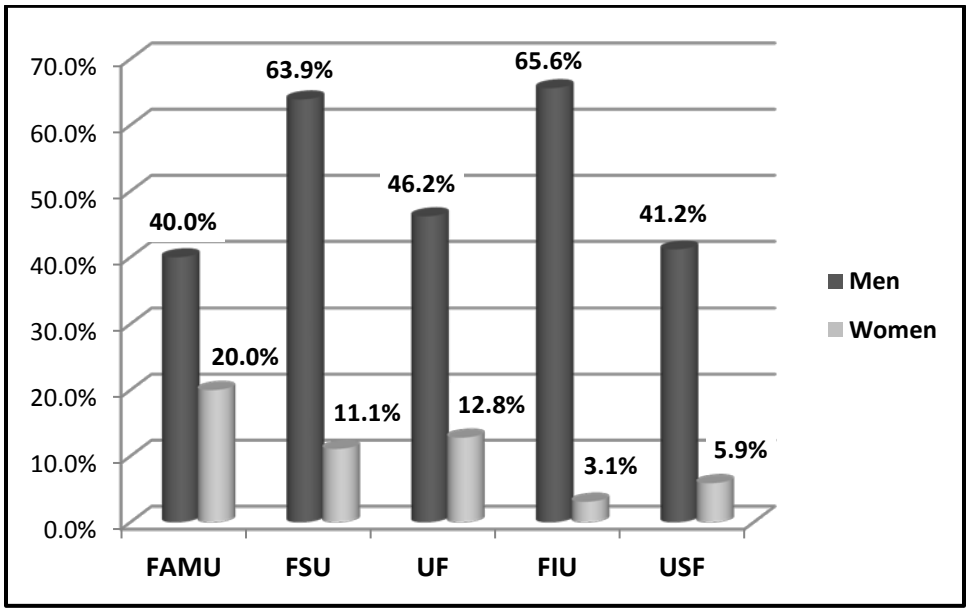

Figure 1. Tenured Chemistry Faculty by University and Gender 2011-2012

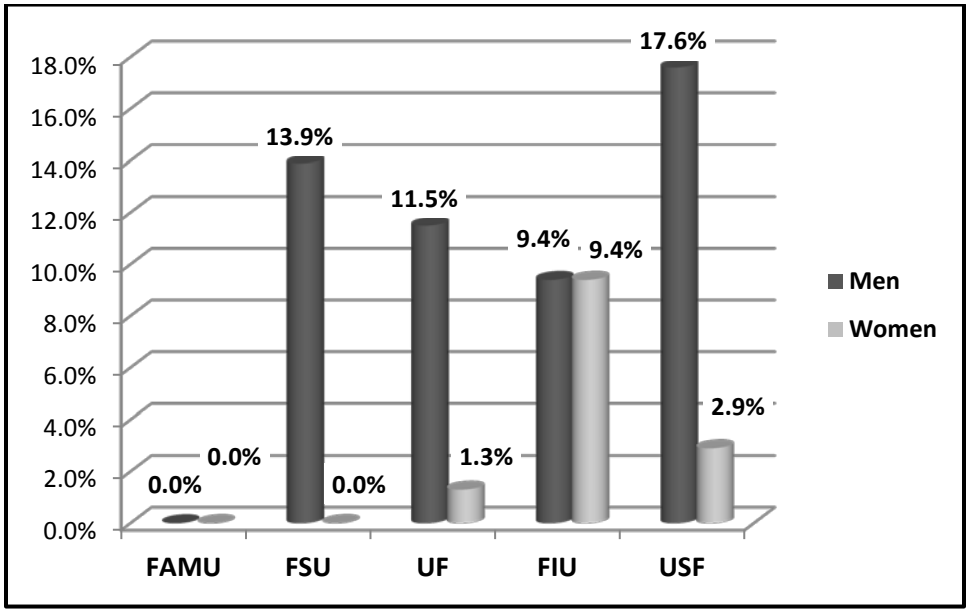

Figure 2. Tenure Track Chemistry Faculty by University and Gender 2011-2012

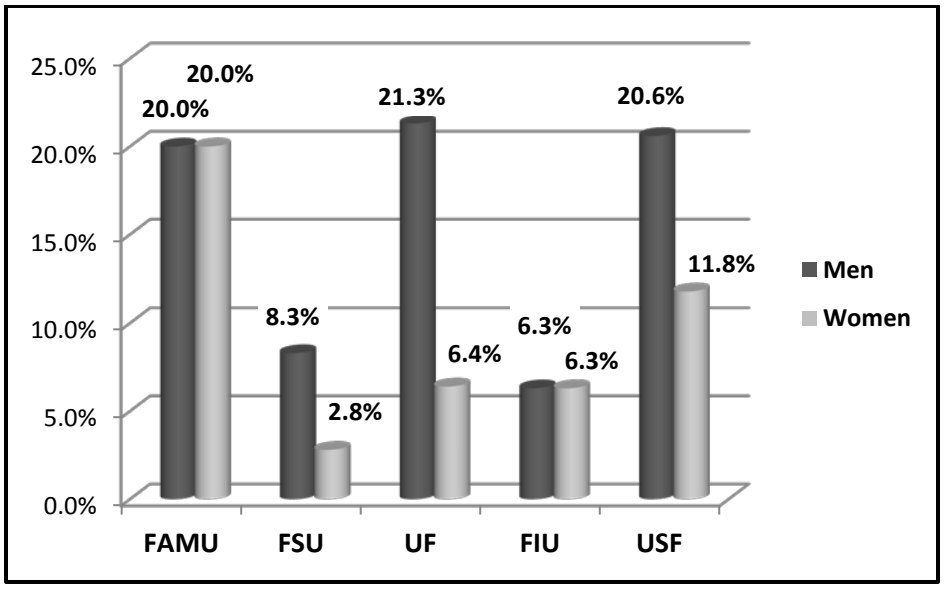

Figure 3. Non-Tenure Track Chemistry Faculty by University and Gender 2011-2012

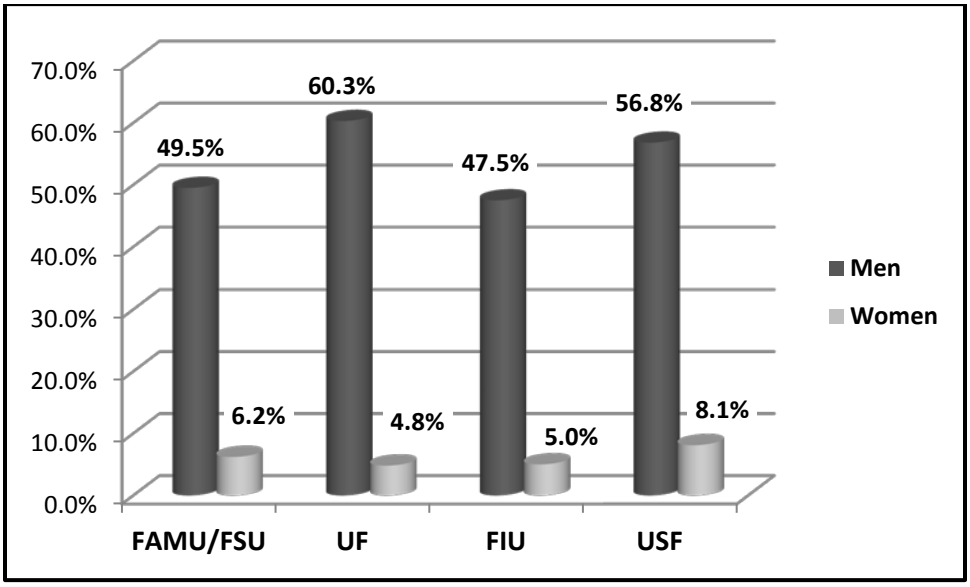

Figure 4. Tenured Engineering Faculty by University and Gender 2011-2012

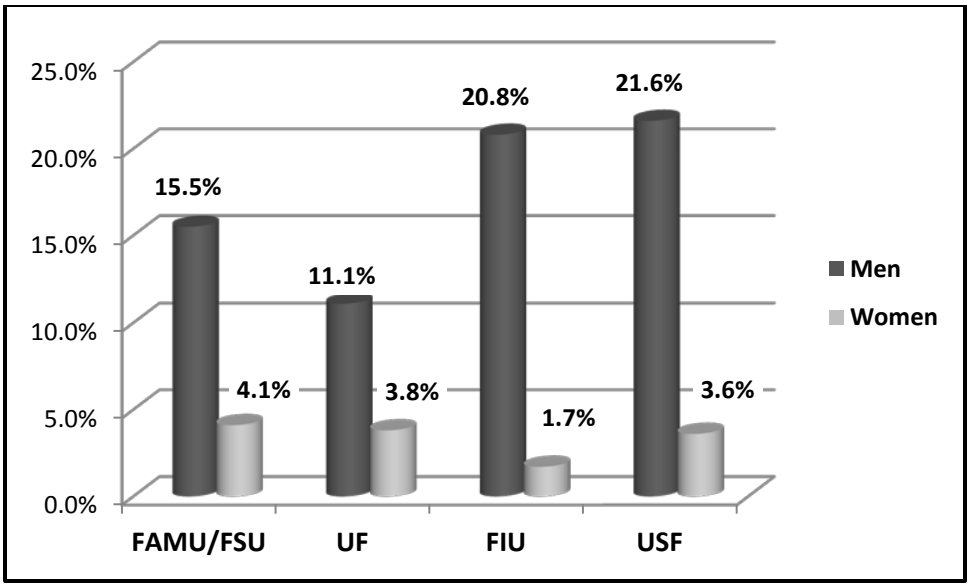

Figure 5. Tenure Track Engineering Faculty by University and Gender 2011-2012

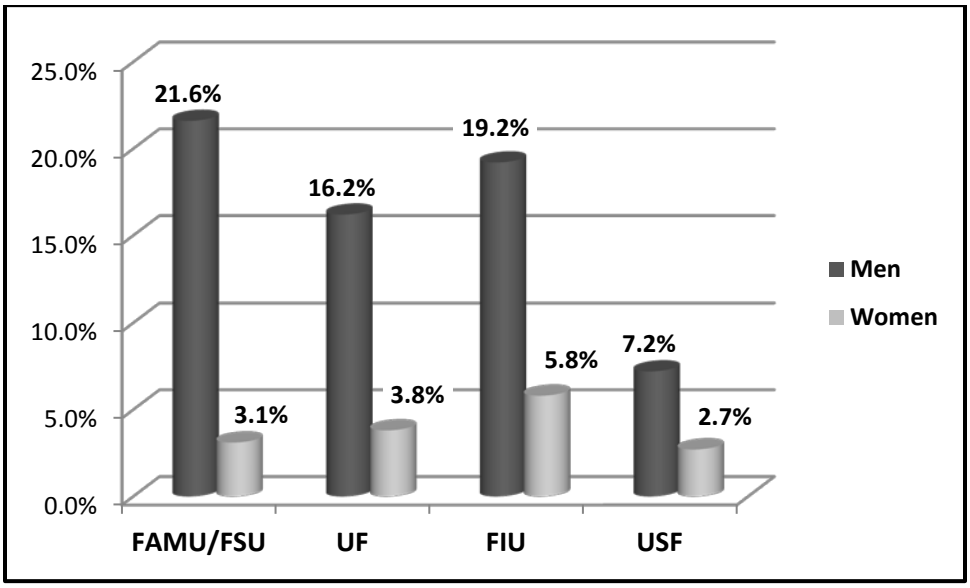

Figure 6. Non-Tenure Track Engineering Faculty by University and Gender 2011-2012

Table 1. University of South Florida 2011-2012 Chemistry Faculty by Gender, Ethnicity, and Tenure Status.

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	29.4	10	5.9	2	8.8	3	0.0	0	8.8	3	5.9	2
Black	0.0	0	0.0	0	0.0	0	0.0	0	2.9	1	0.0	0
Hispanic	0.0	0	0.0	0	2.9	1	0.0	0	2.9	1	5.9	2
Asian	11.8	4	0.0	0	5.9	2	2.9	1	5.9	2	0.0	0
Non Resident Alien	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	41.2	14	5.9	2	17.6	6	2.9	1	20.6	7	11.8	4

Table 2. University of Florida Chemistry 2011-2012 Faculty by Gender, Ethnicity, and Tenure Status.

Ethnicity	Tenured Faculty				Tenure-Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	41.0	32	9.0	7	5.1	4	1.3	1	16.7	13	3.8	3
Black	0.0	0	1.3	1	0.0	0	0.0	0	0.0	0	0.0	0
Hispanic	1.3	1	1.3	1	0.0	0	0.0	0	0.0	0	0.0	0
Asian	3.8	3	0.0	0	5.1	4	0.0	0	2.6	2	1.3	1
Other	0.0	0	1.3	1	1.3	1	0.0	0	2.6	2	1.3	1
Total	46.2	36	12.8	10	11.5	9	1.3	1	21.8	17	6.4	5

Table 3. Florida State University 2011-2012 Chemistry Faculty by Gender, Ethnicity, and Tenure Status.

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	55.6	20	5.6	2	11.1	4	0.0	0	8.3	3	2.8	1
Black	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Hispanic	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Asian	8.3	3	5.6	2	2.8	1	0.0	0	0.0	0	0.0	0
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	63.9	23	11.1	4	13.9	5	0.0	0	8.3	3	2.8	1

Table 4. Florida International University 2011-2012 Chemistry Faculty by Gender, Ethnicity, and Tenure Status.

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	46.9	15	3.1	1	6.3	2	3.1	1	6.3	2	0.0	0
Black	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Hispanic	9.4	3	0.0	0	0.0	0	0.0	0	0.0	0	3.1	1
Asian	9.4	3	0.0	0	3.1	1	6.3	2	0.0	0	0.0	0
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	3.1	1
Total	65.6	21	3.1	1	9.4	3	9.4	3	6.3	2	6.3	2

Table 5. Florida Agricultural and Mechanical University 2011-2012 Chemistry Faculty by Gender, Ethnicity, and Tenure Status.

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	0.0	0	6.7	1	0.0	0	0.0	0	6.7	1	0.0	0
Black	40.0	6	13.3	2	0.0	0	0.0	0	6.7	1	13.3	2
Hispanic	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Asian	0.0	0	0.0	0	0.0	0	0.0	0	6.7	1*	0.0	0
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	6.7	1**
Total	40.0	6	20.0	3	0.0	0	0.0	0	20.0	3	20.0	3

* this faculty member was a full professor who is now retired and is an adjunct (non-tenure track) faculty member.

** black Canadian (not an American Citizen)

Table 6. University of South Florida 2011-2012 Engineering Faculty by Gender, Tenure Status, and Ethnicity

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	33.3	37	3.6	4	9.9	11	0.0	0	3.6	4	0.9	1
Black	1.8	2	0.9	1	1.8	2	0.9	1	0.9	1	0.0	0
Hispanic	3.6	4	2.7	3	0.9	1	0.0	0	0.0	0	0.9	1
Asian	18.0	20	0.9	1	9.0	10	2.7	3	2.7	3	0.9	1
Non Resident Alien	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Totals	56.8	63	8.1	9	21.6	24	3.6	4	7.2	8	2.7	3

Table 7. University of Florida 2011-2012 Engineering Faculty by Gender, Tenure Status, and Ethnicity

Ethnicity	Tenured Faculty				Tenure-Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	37.5	118	2.5	8	5.7	18	1.3	4	11.1	35	1.6	5
Black	1.0	3	0.3	1	0.6	2	0.6	2	0.0	0	0.0	0
Hispanic	2.9	9	0.0	0	0.3	1	0.0	0	0.6	2	0.3	1
Asian	18.1	57	1.9	6	2.2	7	1.3	4	0.6	2	0.6	2
Other	1.0	3	0.0	0	2.2	7	0.6	2	3.8	12	1.3	4
Total	60.3	190	4.8	15	11.1	35	3.8	12	16.2	51	3.8	12

Table 8. Florida State University and Florida Agricultural and Mechanical University 2011-2012 Engineering Faculty by Gender, Tenure Status, and Ethnicity

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	17.5	17	2.1	2	6.2	6	1.0	1	9.3	9	1.0	1
Black	12.4	12	1.0	1	1.0	1	0.0	0	6.2	6	1.0	1
Hispanic	1.0	1	1.0	1	0.0	0	0.0	0	0.0	0	0.0	0
Asian	18.6	18	2.1	2	8.2	8	3.1	3	6.2	6	1.0	1
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	49.5	48	6.2	6	15.5	15	4.1	4	21.6	21	3.1	3

Table 9. Florida International University 2011-2012 Engineering Faculty By Gender, Tenure Status, and Ethnicity

Ethnicity	Tenured Faculty				Tenure Track Faculty				Non-Tenure Track Faculty			
	Men		Women		Men		Women		Men		Women	
	%	n	%	n	%	n	%	n	%	n	%	n
White	20.8	25	1.7	2	5.0	6	0.8	1	8.3	10	0.8	1
Black	3.3	4	0.0	0	0.8	1	0.0	0	2.5	3	0.0	0
Hispanic	3.3	4	0.0	0	0.0	0	0.0	0	4.2	5	3.3	4
Asian	20.0	24	3.3	4	15.0	18	0.8	1	4.2	5	1.7	2
Other	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	47.5	57	5.0	6	20.8	25	1.7	2	19.2	23	5.8	7