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CENTER FOR TRANSPORTATION INFRASTRUCTURE AND SAFETY

Women In Science & Engineering Scholarships and Summer Camp Outreach Programs: Year 7

by

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16. Abstract Since the UTC Scholarship program began in the spring of 2005 and continues today on the S&T campus, numerous female students have benefitted tremendously from this source of financial aid. The program began in the first few years with 15-30 awards, and has now progressed to over 130 per year. Approximately 175 scholarship recipients have graduated since the inception of the program, and of those 45% have been employed in transportation-related industries. In addition, the female enrollments in several transportation-related majors have increased greatly since the program's inception. Examples of these increases include: Civil Engineering from 64 to 100, Mechanical engineering from 55 to 96, and Architectural engineering from 35 to 63. The program has established a priority awarding guidelines based on a 3.0 cumulative grade point average, and the plans of the recipient to major in a transportation-related field. With these guidelines will also come the reporting of the final outcomes- the number of students participating in the program who are finding permanent, summer, or co-op related employment in a transportation-related field. This will be requested of students when they are initially awarded the scholarship, and as they progress with each scholarship renewal. This scholarship program in the past year has been a tremendous help in increasing female enrollment on campus to help set the all-time record of 1,839 total female enrollment for the academic year. We are also happy to report that these scholarships help with retention and graduation rates for women, as our 1 st -2 nd year retention rates have been in the 88%-92% range in the years since the scholarships were first given, and the 6-year graduation rates have increased from 67% to 74% in that same time frame.			
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By Cecilia Elmore

Overall Summary:

Since the UTC Scholarship program began in the spring of 2005 and continues today on the S&T campus, numerous female students have benefitted tremendously from this source of financial aid. The program began in the first few years with 15-30 awards, and has now progressed to over 130 per year. Approximately **175** scholarship recipients have graduated since the inception of the program, and of those **45% have been employed in transportation-related industries**. In addition, the **female enrollments in several transportation-related majors have increased greatly since the program's inception**. **Examples of these increases include: Civil Engineering from 64 to 100, Mechanical engineering from 55 to 96, and Architectural engineering from 35 to 63**. The program has established a priority awarding guidelines based on a 3.0 cumulative grade point average, and the plans of the recipient to major in a transportation-related field. **With these guidelines will also come the reporting of the final outcomes- the number of students participating in the program who are finding permanent, summer, or co-op related employment in a transportation-related field. This will be requested of students when they are initially awarded the scholarship, and as they progress with each scholarship renewal.** This scholarship program in the past year has been a tremendous help in increasing female enrollment on campus to help set the all-time record of 1,839 total female enrollment for the academic year. We are also happy to report that these scholarships help with retention and graduation rates for women, as our 1st-2nd year retention rates have been in the 88%-92% range in the years since the scholarships were first given, and the 6-year graduation rates have increased from 67% to 74% in that same time frame.

Outreach Activities and Professional Development Opportunities for Women

Society of Women Engineers (SWE) National Conference:

***October 23-27, 2013 (National); 8 students; 2 staff attended**

Regional Conference Feb. 23-25; 8 students attended

Missouri S&T Society of Women Engineers (SWE) students participated in the National and Regional conferences which are the major events for SWE and one National is one of the largest technical and career conferences for female engineers in the country. Each year, the conference attracts nearly 5,000 engineering professionals, students and corporate representatives. The conference is an opportunity for engineering companies and corporations to recruit top talent from SWE membership. It also provides educational, technical and career opportunities for professional and student engineers. Additionally, two UTC scholarship recipients who are graduating civil engineering majors are the current president of SWE and regional collegiate representatives of SWE! Both have jobs in the transportation industry, as well! The 2012-2013 SWE president and treasurer are civil engineering students, and many female civil engineering students are members of SWE.



Girls “Lock-In” Conference’s (11-12th grade girls)

***October 4-5, 2013 (32 participants attended)**

*** April 19-20, 2013 (26 attended)**

The conferences gave the students the opportunity to stay in a residence hall, learn more about studying math, science, and engineering at Missouri S&T, meet other perspective and current students, learn tips for financial aid and admission, and participate in team projects. **Transportation-related hands-on activities are a part of these conferences, usually with workshops or lab demonstrations.** The conference was designed by students who are members of the Missouri S&T Society of Women Engineers (SWE) and the Women in Engineering and Science Program. This event has a 60% success rate in enrolling attendees.

Girl meets Missouri S&T (12th grade girls)

***April 15-16, 2012 (13 participants)**

This 2-day program is a student recruitment event for female high school seniors and transfer students who have been admitted to Missouri S&T but who have not yet made their enrollment deposit and commitment to attend Missouri S&T. Designed to invite, encourage, promote and support female students to enroll as undergraduate students at Missouri S&T. The recruitment event will allow students to see first hand what life as a female engineering or science student entails and to gain insight into the opportunities available for a successful undergraduate career at Missouri S&T. Visiting campus is the best way for students to get a complete picture of Missouri S&T and its programs. Parents will be invited to attend the event with the student. Students will stay overnight in the residential halls and are matched with current female students who will serve as a peer while on campus. This event has a 75% success rate of enrolling attendees.

“Expanding Your Horizons... in Math and Science”

November 1, 2013 (over 500 participants)

This national program was established by the Math and Science Network in 1976. Missouri S&T implemented the annual EYH conference in 2000 and today has served over 3000 students. Missouri S&T hosted its 7th conference for over 500 young women. This conference is designed to nurture girls’ interests in science and math courses and to encourage them to consider science and math based career options such as engineering, computer science, and biometrics. EYH is an invitation for 7th & 8th grade girls to visit the Missouri S&T campus and attend a keynote presentation by a successful women engineer or scientist, participate in hands-on math/science activities, and interact with female students, faculty and practicing engineers and scientists who serve as positive role models. Many of the workshops use transportation related activities such as “Truss me”, where students design and build truss bridges that must be weight bearing and the best design wins a prize.

Summer Solutions Camp 9-10th grade girls camp

*** June 18-22, 2012 (30 attended); June 17-21, 2013 (30 attended)**

Summer Solutions Camp is designed to pique the interest of freshman and sophomore high school girls in engineering and science. The one-week program is designed to enable female students to obtain a clear picture of engineering and science as a profession. Several hands on projects are planned to help the students learn more about career options and the demand faced in the fields of engineering, math, and science.

“It’s a Girl Thing” – 7th & 8th Grade Girls

*** June 4-8, 2012 (30 attended); June 3-7, 2013 (28 attended)**

The program is designed to enable young female students who will be in the 7th & 8th grades during the 2012-13 school term obtain a clearer picture of engineering and scientific/technological professions. Students will get an opportunity to explore engineering, math, and science through “hands-on” experience. The sessions include laboratory experience, at least one having a transportation-related them, such as building truss bridges with team engineering projects, and time to interact formally and informally with role models and peers. Students become acquainted with various fields of engineering and science and with the demand faced in these fields by practicing engineers and scientists. Another goal is to acquaint students with the type of effort required for college study.



Minority Intro to Technology & Engineering (MITE) June 5-10, 2012, June 19-24, 2012

MITE is an on-campus week long summer program for traditionally under-represented minority students. Campers will participate in one- to two-hour sessions covering the work performed in the different fields of engineering. They include both experimental and applied work. In addition, orientation sessions will be held to discuss admission requirements and procedures; how and when to apply for scholarships and other forms of financial aid; student government and social organizations, and other campus resources

40 ATTENDEES

Minority Intro to Technology & Engineering (MITE) June 2-7 & June 16-21, 2013

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42 ATTENDEES

Scholarships~~~ July 7th through 26th 2013 (25 scholarships)

Hit the Ground Running (HGR) Summer Enrichment Program for incoming freshman

The objectives of the pre-engineering summer program are:

1. To bolster and strengthen the pre-college preparation in mathematics, science, and English composition of minority students who have potential for engineering careers and to encourage them to enter such careers.
2. To provide opportunities for program participants to learn more about the career opportunities in engineering and science and technology.
3. To help make an adjustment to the rural and university environment.
4. To assist selected students through the baccalaureate degree with tutorial, scholarship, employment opportunities, and counseling help as needed.

This program is for all the Student Diversity Program (SDP) scholarship recipients. For three weeks, each year the SDP scholars take classes in Mathematics (at the appropriately determined level), English and chemistry. The benefits are tremendous, not only do the students have an academic head start when the fall semester begins, but they also become a team. Rigorous study prepares them for a demanding engineering curriculum, and they experience life in a dorm away from friends and family. Along with academics, scholars learn about career opportunities that await them once they earn their degree. Special seminars are hosted by industry representatives and engineering department chairs that focus on career and educational opportunities for minority students. The proven track record of this program on the Missouri S&T campus has sparked a similar program for minority freshman engineering students. Students are surveyed at the end of the program with regards to how their degree could contribute to transportation sustainability and future developments.

Scholarship~~~33 students July 8th~27th 2012

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Fall Si Se Puede: November 9-12, 2012

Society of Professional Hispanic Professionals annually coordinates ¡Sí Se Puede! This helps students to explore the career options Missouri S&T has to offer and gives them an inside look at real college life. It is an on-campus visit program for Hispanic and Latino students to explore a future career in math and science. During their time at Missouri S&T the students will interact with members of the SHPE and NSBE chapters. Participants will also meet faculty and staff that volunteer their time to teach students about degree programs, career options, co-ops and internships, answer all their questions and more.

Society of Hispanic Professional Engineers National Conference: November 14-18th, 2012, Fort Worth, TX

With over 10,000 students attending the event each year it is an excellent opportunity to recruit minority students at both the undergraduate and graduate levels. The goal is designed to increase the awareness, participation, and excitement surrounding graduate school and the pursuit of higher education. Through the careful integration of planned events, students and professionals can learn about higher education opportunities and resources. Several new activities have been incorporated into the agenda that are designed to promote higher education, increase student participation, and emphasize academic and technical excellence.

NSBE Fall Regional Conference November 9-11, 2012 Austin, TX

This conference is the premier event for National Society of Black Engineer's Jr, Collegiate, and Alumni members of Region V to network and strive towards fulfilling the society's mission. Conference participants receive the full benefits of the conference

through engaging workshops, competitions, career and Graduate School fairs, and networking opportunities that truly exemplify “excelling academically, succeeding professionally and positively impacting the community.”

Pre-College Initiative were held February 14-17th, 2013

The National Society of Black Engineers (NSBE) is the largest student-run, non-profit organization in the country. Its objective is to promote the recruitment, retention, and successful graduation of African-Americans in engineering, science and technology. NSBE serves as a vehicle to promote unity through programs that encourage academic excellence, perennial growth, and professional development. One of the objectives of the Missouri S&T-NSBE chapter is to encourage high school students to pursue careers in engineering, science, and technology and to consider Missouri S&T as a choice for their college home. During this on-campus visit program students will participate in a series of workshops, hands-on activities, an admissions seminar, and a civil engineering design project.