



## **S-STEM: ENG2 Scholars for Success 2007-2013**

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## **S-STEM: ENG<sup>2</sup> Scholars for Success 2007-2013**

### **Abstract**

The National Science Foundation (NSF) sponsored S-STEM scholarship project in the Louisiana State University College of Engineering (CoE) provided monetary, academic and community support to 59 academically talented and financially needy engineering undergraduate students while encouraging underrepresented and underserved populations to be part of the program. The ultimate project objectives were to provide support to the recipient scholars so they could complete a degree in engineering/construction management (E/CM) and increase the percentage of underrepresented and underserved students.

The project encompassed three major components: recruitment, retention and placement. Recruitment consisted of communications with high school counselors, direct mailings to incoming freshmen candidates, and collaboration with high school math and science teachers and college faculty. The program was open to anyone with a demonstrated financial need. Retention efforts leveraged components implemented as part of an existing NSF STEP Project within the college. The suite of engineering STEP retention activities/programs included peer mentoring, summer engineering enhancement camp, faculty development and a freshmen introduction to engineering course. New retention activities developed specifically for the S-STEM scholars program included a seminar series focused on developing professional and academic skills, a winter reading program, and the development and implementation of a summer jobs program with emphasis on connecting students with Research Experiences for Undergraduates and employers through networking activities. Additionally, the CoE Diversity Office conducted regular individual meetings with the scholars to establish a relationship with the student and identify problem areas early.

The S-STEM scholarship project was funded from August 2007 – July 2013. Initially, financial support was provided to 22 incoming freshmen, and four students with junior standing for the 2008 cohort. The fall 2009 cohort consisted of 8 incoming freshmen and five students with upper level standing. For the following three years, the scholarships were awarded to upper level students. The scholars' demographic information indicates that underrepresented students were represented at a level higher than the overall CoE demographics.

Increased retention and graduation of students in engineering were primary goals of the project. Of the 59 students who were part of the S-STEM program, 36 (61%) maintained scholarship eligibility until graduation or the end of the grant, 10 changed majors (six into in a different STEM discipline), and only six students left the University with no indications of additional higher education plans. By the end of the program 44% of the scholarship participants graduated with an engineering/construction management degree and 51% graduated from the University within a five year time frame. This rate compares favorably with the 2007 CoE freshmen cohort rate of 37.2%, and another 22% of S-STEM participants are anticipated to graduate with engineering degrees over the next year. The number of underrepresented S-STEM scholars was proportionally higher than the overall CoE enrollment and the scholar graduation rate was higher. Overall, the five year combined retention and graduation (May 2013) in engineering/construction management for the program was 69%.

## Introduction

Fulfilling the need for college graduates in science, engineering and technology has been identified as a critical element in maintaining the United States' progress and leadership in a competitive, technology driven world economy<sup>1</sup>. During the last quarter of the 20<sup>th</sup> century overall enrollment in engineering degree programs declined while attrition rates for those students starting in engineering increased<sup>2,3</sup>. This was happening as the first wave of engineers from the baby boom years prepare to retire from the active workforce; thus, this creates a gap between the insufficient number of engineers (and other scientist & technology workers) entering the workforce and the number of technologically focused researchers and innovators needed to continue economic growth<sup>1</sup>. Fortunately, a growth trend for enrollment in engineering programs has been observed since 2000 with a corresponding increase in bachelor's degrees awarded, and a sharp increase of freshmen enrolling in engineering has occurred since 2005<sup>4,5</sup>

Nationally, minorities and women continue to be under-represented in engineering degrees and careers<sup>6</sup>, and a programs to increase engineering undergraduate enrollment, persistence and graduation of this group will be necessary to meet the demand for more engineers<sup>1,7</sup>. Also, improving the diversity of engineering will lead to a variety of perspectives that ultimately results in optimal, creative solutions to engineering problems<sup>8</sup>. Within the college experience, a more diverse student population generally correlates with improved learning outcomes and experiences for all students<sup>9</sup>.

As students from under-represented groups pursue engineering degrees, the higher education community will need to deliberately address issues that will support recruitment, persistence and increase graduation rates. Across all fields, females attend college and graduate at higher rates than males, but females are far less likely to enter the STEM disciplines. Thus, the initial and major task is to increase recruitment into engineering of female students who plan to attend college.<sup>8</sup> With respect to underrepresented minorities, both low recruitment and retention are barriers to increasing the number of graduates.<sup>10</sup> Among students who have financial need, a key retention component is providing non-loan based awards that are correlated with higher persistence rates<sup>7</sup>. Additionally, retention of engineering students is shown to improve with programs that engage the students beginning with the first year<sup>11-16</sup>.

### *Project Goals and Objectives*

The S-STEM scholarship project, S-STEM: ENG<sup>2</sup> Scholars for Success (NSF Project #0728472), in the College of Engineering at Louisiana State University began in August 2007 and completed five years of full scholarship implementation. The ultimate project objectives were to provide support to the recipient scholars with financial need so they could complete a degree in engineering/construction management (E/CM); increase the percentage of underrepresented and underserved students retained in engineering; and to provide academic and professional development activities to enhance scholar preparation for the engineering workforce and graduate school.

In 2007, female, undergraduate engineering enrollment at LSU was 15.7% and under-represented minority undergraduate enrollment, which includes African American, Hispanic and Native American students, was 10.1%, and these numbers were below the national average. Successful implementation of this program by identifying students who had financial need would also

increase the percentage of engineering and construction management students who are women and minorities.

### *Background*

Over the period of the grant, financial support was provided for 59 academically talented undergraduates with financial need in the College of Engineering, with 32 scholarships awarded to incoming freshmen. Engineering undergraduate students from underrepresented and underserved populations were strongly encouraged to be part of the program. Additionally, complementary scholarships from the College of Engineering and Departments of Civil and Environmental and Petroleum Engineering were awarded from corporate matching funds and College of Engineering scholarship funds. The project encompassed three major components: recruitment, retention and placement. Recruitment has consisted of multiple approaches including communications with high school counselors, direct mailings to candidates, and collaboration with high school math and science teachers and college faculty. Retention efforts leveraged components of NSF STEP Project- Engineering Engagement for Student Success (NSF STEP #0622524). The suite of STEP retention activities/programs included mentoring, summer engineering enhancement camp (Encounter Engineering), academic tutoring, faculty development, a freshmen introduction to engineering course, and a peer mentoring program with upper level engineering students<sup>17</sup>. Retention activities developed specifically for the S-STEM scholars program included a seminar series, a winter reading program and the development and implementation of a summer jobs program with emphasis on connecting students with Research Experiences for Undergraduates and with employers through networking activities.

The first S-STEM scholarships were awarded in fall 2008 and each fall semester through 2012. New incoming freshmen scholarships were awarded in fall 2008 and fall 2009 only, while new upper level students, who were majority juniors, were awarded scholarships for all five years. A total of 59 LSU engineering students received funding from the S-STEM scholarship program during the five years that awards were made.

### **Program Elements**

#### *Scholarship Parameters and Eligibility*

The eligibility, selection and continuing eligibility requirements for the LSU S-STEM scholarship for engineering/construction management majors included academic performance, leadership/professional orientation, and financial need. Incoming freshmen applicants were considered academically eligible if they qualified for admission to LSU, and they were further evaluated on their high school GPA and ACT composite scores. The incoming freshmen were assessed for leadership and motivation based on high school activities and essays. The upper level students were considered academically eligible if they had overall college GPA  $\geq 2.75$ , and they were further evaluated on their academic performance in their engineering curriculum. The upper level students were also evaluated for their leadership and professional involvement while attending LSU. All potential scholars were verified to be financially eligible based on the FAFSA expected family contributions being less than the cost of attendance. To remain eligible, all students were required to maintain an overall GPA of 2.75 or greater and participate in the services provided as part of the S-STEM project. If a student did not meet the criteria at the completion of any semester, they were placed on scholarship probation for the subsequent regular semester with funding. Scholars who did not meet the criteria at the end of the

probationary period were no longer funded, but were encouraged to continue participation in the support programs.

### *Scholarship Marketing and Application*

The first solicitation of incoming freshman scholarship applications was posted on the LSU College of Engineering's website on January 31<sup>st</sup>, 2008 under Prospective Students, Freshman Scholarships. Several other forms of marketing were used to ensure development of adequate women and minority applicant pool including flyers and communications with high school teachers and staff. LSU consolidated its Offices of Admissions and Student Aid into one office and launched combined admissions and scholarship application, and a Scholarship Query system was used to identifying potential scholarship applicants. This software allowed CoE staff to run queries on all students admitted for fall 2008, to identify all women and minority students who declared an engineering or construction management discipline. Personal letters (approximately 300) were sent to these students, along with an application packet and scholarship criteria, informing them of their possible eligibility for the S-STEM scholarship.

The first upper level student scholarship application packet was placed on the College of Engineering website for current enrolled students. Also, academically qualified applicants were identified by GPA and classification, and an application packet, including description of award, selection criterion, and criterion to maintain eligibility, was e-mailed to these students.

For the 2009-2010 academic year, five scholarships were available for upper level engineering students (four juniors and one senior), and eight scholarships were available for engineering students who would be entering the university as freshman in the fall of 2009. The freshmen scholarships became available as a result of students changing majors at the end of the spring semester and 2008 freshman students not achieving the required 2.75 cumulative GPA. The application materials and information for the students with upper-level standing were posted on the Office for Diversity Programs website and multiple emails targeting underrepresented engineering students were sent. Targeted emails were also sent to academically qualified freshmen prospects and flyers were distributed and posted during freshmen orientation sessions.

For the 2010-2011 academic year, 12 scholarships were available for continuing engineering students with four scholarships reserved for sophomore students who entered LSU as freshmen fall 2009. Four scholarship slots were awarded according to the original project plan for upper level students. The three sophomore level scholarships became available after two of the 2009 freshmen cohort changed majors and one student did not meet the scholarship academic criteria. Also, three students from the 2008 freshmen cohort no longer met the academic criteria, and it was determined that the scholarship budget could support four students at the junior level.

All scholars returning for the 2011-2012 academic year retained eligibility with the exception of one student who changed to non-engineering STEM major during the fall semester. A call for applications was made, and one slot was filled at the beginning of the spring 2012 semester.

The scholarship program received a one year extension for the 2012-2013 academic year based on excess residual funds; therefore, the College of Engineering awarded seven scholarships to students for the final year.

*Freshmen Participants*

Applicants (2008 Freshmen) A

total of 77 scholarship applications were received for the 2008-09 freshman scholarship cohort. The demographics and academic indicators of the applicant pool were collected (Table 1). The engineering majors declared by the total freshman applicant pool were from 9 of the 10 engineering disciplines in the CoE and 10 students indicated other majors (Figure 1). The majority of the applicant resided in Louisiana and the remaining applicants were from nine other states and two countries.

Student applicants were reviewed in three stages. First the application packages were examined for completion and adherence to scholarship requirements. The students who had demonstrated financial need based upon the

cost of attendance versus family contributions were then placed into the eligible applicant pool. At this stage, 30 applications were declined due to an incomplete application or the applicants did not demonstrate a financial need. Next, applications were reviewed and scored across six categories by a panel of LSU faculty and staff. Lastly, the applicants were rank ordered based the total point score for all criteria, which have remained consistent from year to year. Based on the discussions regarding the rankings and financial aid status of each applicant, the first 20 applicants were selected and offered a scholarship. Ten contingency applicants were also chosen.

Of the first 20 scholarship offers extended, 17 acceptance letters were received. Several reasons were given for declining of the scholarship, i.e. better financial offers from other universities or LSU was not their first collegiate choice. The three contingent applicants were offered the scholarship. During the summer and prior to the start of the fall 2008 semester, five more incoming freshmen who initially accepted the S-STEM scholarships either did not attend the

Table 1. S-STEM 2008 freshman total applicant pool academic indicators and demographics (n=77).

Description	Number	Range/Percent
Mean GPA	3.74	2.97 – 4.54
Mean ACT	26	20 - 35
Female	40	51.9%
Male	37	48.0%
African American	35	45.4%
Asian American	8	10.4%
Caucasian	8	33.8%
Hispanic	26	10.4%

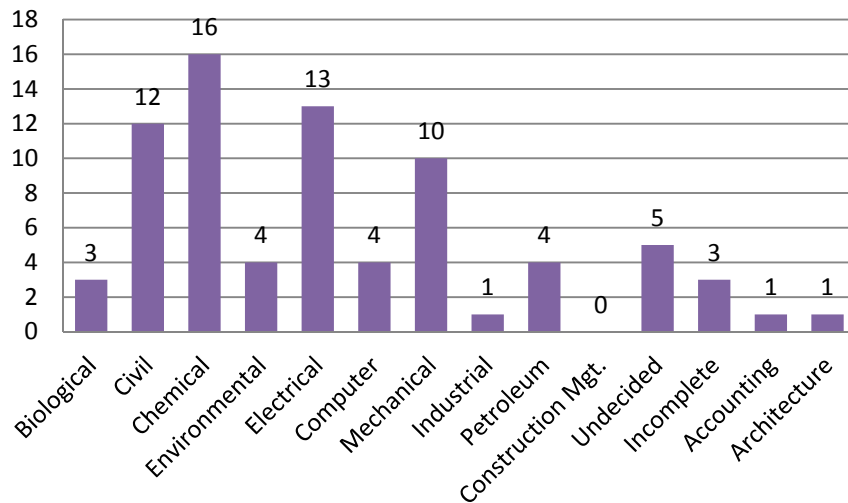


Figure 1. Engineering majors indicated by the 2008 S-STEM freshmen total applicant pool (actual number).

university or changed their major. These available scholarships were then offered to the next five eligible candidates.

**Incoming Freshman Cohort 2008**

Scholarships valued at \$3,500 each for the 2008-2009 academic year were awarded to the incoming freshman. Demographically, this S-STEM freshman cohort contained proportionally more females and minorities (Table 2) than the overall CoE enrollment of 15.8% and 10.8% respectively. The freshmen S-STEM scholars declared majors from 6 of the 10 discipline areas offered in the CoE (Figure 2).

The fall 2008 LSU entering freshman (overall) had a mean ACT score of 25.3, essentially the same as the S-STEM scholars. All 2008 LSU entering engineering majors had a mean ACT score of 26.5.

After the fall 2008 semester, two students in the program were no longer qualified participants. One student changed his/her major to a non-engineering STEM discipline, and the other student transferred to another university to pursue a varsity athletic opportunity. The two open scholarships (pro-rated for one semester at \$1,750) were allotted to previous applicants.

**Incoming Freshmen Cohort 2009** At the end of the first year, six freshmen lost scholarships based on academic criteria and two students changed majors. With funds available for eight scholarships over three years, it was decided to add another freshman cohort to the program. The 2009 freshmen cohort received scholarships valued at \$3,500 year initially, and continuing for two additional years provided they maintained eligibility. The freshmen in the 2009 cohort had a variety of backgrounds (Table 3) and majors (Figure 3), and their

Table 2. S-STEM fall 2008 entering freshman scholars' demographics (n=20).

Description	Number	Range/Percent
Mean H.S. GPA	3.73	3.00-4.26
Mean ACT	25.4	21-33
Female	5	25%
Male	15	75%
African American	13	70%
Asian American	1	5%
Caucasian	5	25%
Hispanic	1	5%

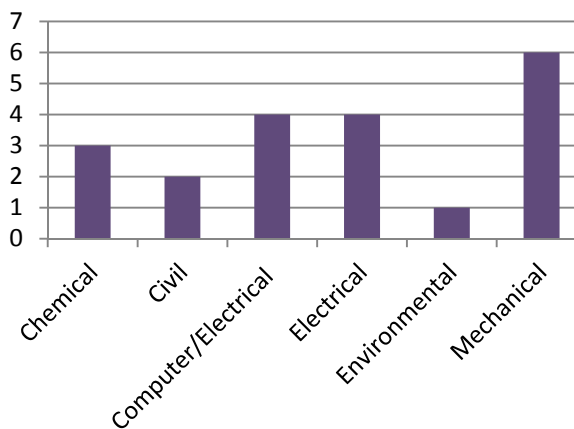


Figure 2. S-STEM fall 2008 entering freshman scholars declared majors.

Table 3. Fall 2009 freshman cohort demographic data (n=8).

Description	S-STEM	CoE	University
GPA Mean/Range	4.00	3.05-4.44	-
ACT Mean/Range	27.2	22-34	25.5
Female	5	62.5%	20.2%
Male	3	37.5%	79.8%
African American	4	50.0%	8.6%
Asian	1	12.5%	3.7%
Caucasian	3	37.5%	78.4%
Hispanic	0	0.0%	3.15%

academic high school indicators were strong with a mean composite ACT of 27.2 and mean high school GPA of 4.00.

*Upper Level Participants*  
Upper Level Cohort 2008 The program received a total of 34 applications for the upper level student S-STEM scholarship during summer 2008. Each applicant was evaluated according to financial need, academic merit and leadership, and they were ranked according to the Upper level student scholarship rubric by the same

scholarship panel that ranked the freshman applicants. The categories scales for the upper level student criteria differed from the freshman criteria in that leadership and work experience were highly rated. The demographics of the total applicant pool were collected (Table 4), and majors from 9 of the 10 disciplines in the CoE were represented (Figure 4).

The pool of applicants was evaluated and narrowed to ten students who were then interviewed via phone (several were out of the state on internships).

The top four applicants were then selected and notified, and each student accepted the scholarships for \$3,500 for the 2008-2009 academic year. All recipients were female; three were African American and one was Caucasian. There were two chemical engineering majors and two electrical engineering majors, and their classification at selection was two

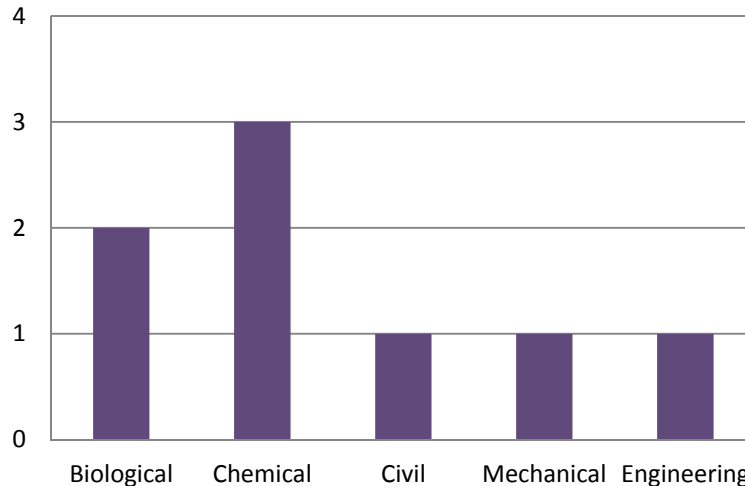


Figure 3. The distribution of majors among the eight S-STEM freshman scholars who entered the program fall 2009.

Table 4. S-STEM 2008 upper level scholarship total applicant pool demographics (n=34).

Description	Number	Range/Percent
Mean GPA	3.28	2.70-4.00
Female	21	61.8%
Male	13	38.2%
African American	18	52.9%
American	0	0.0%
Asian American	15	44.1%
Caucasian	1	2.9%
Hispanic		

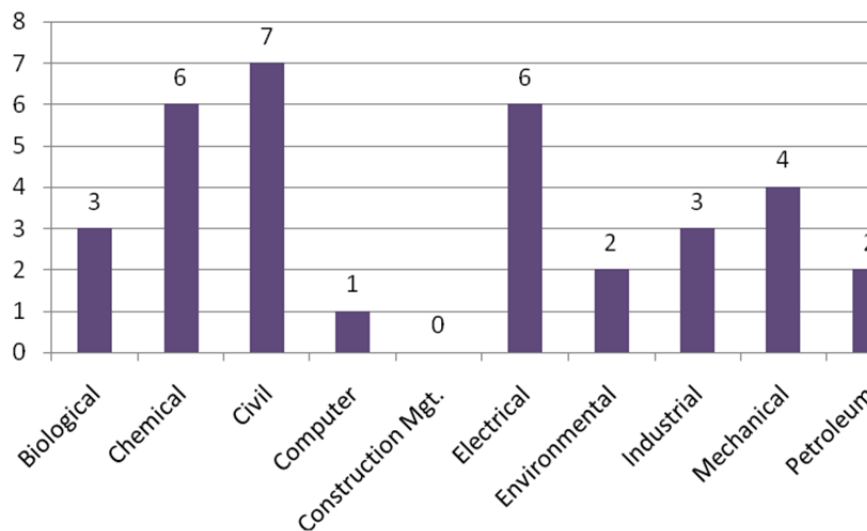


Figure 4. S-STEM upper level 2008 total applicant pool declared engineering majors.



sophomores, one junior and one senior. The mean overall GPA for the selected scholars at the end of the 2007-2008 academic year was 3.40.

Upper Level Cohort 2009 Five scholarships were awarded to upper level engineering students (four juniors and one senior) for the 2009-2010 academic year. The additional senior level engineering scholarship became available when one of the upper level engineering students was accepted into and transferred to a health sciences program within the LSU system. These 2009 upper level scholars had an entering mean cumulative GPA of 3.38 and contributed to the diversity of the program demographically (Table 5) as well as engineering majors represented (one civil, two environmental, one industrial and one petroleum)

Upper Level Cohort 2010 A total of 12 new scholars were added in fall 2010. This was comprised of the scheduled addition of four upper level scholarships for the 2010-2011 academic year and eight additional upper level awards to filled vacancies from the previous year. From an applicant pool of 45 students, four sophomores, six juniors and two seniors were selected. Of the four sophomores selected, three were previous applicants for the 2009 freshmen cohort. These 2010-2011 upper level scholars entered the scholarship program with a mean cumulative college GPA of 3.50 and contributed to the diversity of the program demographically (Table 6) as well as engineering majors represented.

Only one new scholar was added in 2011-2012, and it was determined to select someone who entered as a freshman with 2008 or 2009 cohorts. A mechanical engineering major who entered the university in fall 2008 was selected.

Upper Level Cohort 2012 Seven scholars were added in fall of 2012, from a qualified applicant pool of 14 students. The selected scholars were three sophomores, one junior and two seniors. This cohort was strong academically with a mean cumulative GPA of 3.43 at selection and contributed to the diversity of the program demographically (Table 7).

Table 5. Fall 2009 upper level cohort cumulative college GPA and demographic data (n=5).

Description	Number	Range/Percent
Mean GPA	3.38	3.11-4.00
Female	3	60.0%
Male	2	40.0%
African American	2	40.0%
Asian American	1	20.0%
Caucasian	2	40.0%
Hispanic	0	0.0%

Table 6. Fall 2010 upper level cohort cumulative college GPA and demographic data.

Description	Number	Range/Percent
Mean GPA n=12	3.50	3.00-3.81
Female	8	66.7%
Male	4	33.3%
African American	3	25.0%
Caucasian	8	66.7%
Hispanic	1	8.3%

Table 7. Fall 2012 upperclass cohort cumulative college GPA and demographic data (n=7).

Description	Number	Range/Percent
Mean GPA	3.43	2.98-3.9
Female	3	43.0%
Male	4	57.0%
African American	2	29.0%
Caucasian	4	57.0%
2 or More	1	14.0%

Table 8. Demographic data for all S-STEM scholars were collected for each year (not cohorts).

	Mean for CoE <sup>1</sup>	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Total Scholars (#)	----	26	27	29	24	21
Female (%)	16.9	38	52	52	46	48
Male (%)	83.1	63	48	48	54	52
African American (%)	6.0	67	59	48	46	38
Asian American (%)	4.2	4	11	10	8	4.5
Caucasian (%)	84.7	25	30	38	42	48
Hispanic (%)	3.9	4	0	4	4	4.5
2 or more <sup>2</sup> (%)	1.2	-	-	-	-	4.5

<sup>1</sup> Mean annual College of Engineering fall enrollments 2008-2012; total mean was 2,591 students.

<sup>2</sup>Reporting for 2 or more races began fall 2011.

#### *All Scholars Descriptors*

The demographic data and majors for all S-STEM scholars were tracked for all five years of the program (Table 8). Demographically, the program maintained a high proportion of students who are typically underrepresented in engineering majors; i.e. female and minority. Female undergraduates at LSU have been ~17% of the engineering majors and minorities have been approximately 11% of the engineering majors. Through the course of the program, female students have been 38%-52% of the scholars. With respect to race/ethnicity, the largest portion of the scholars was African American students, and the percentage ranged from 38% to 67% of the scholars.

All LSU College of Engineering disciplines including construction management have been represented in the S-STEM groups over the last four years of the program. Generally the distribution of majors has remained consistent with very few students changing majors.

#### *Activities*

The S-STEM scholars program and the NSF STEP ENG<sup>2</sup>: Engineering Engagement for Student Success program cooperated with the implementation of activities that benefited each project. The STEP project was started in January 2007 and has had engineering freshmen cohorts each year of the program. The STEP project had three main activities: the bridge camp for incoming freshmen (Encounter Engineering), the expanded *ENGR 1050: Introduction to Engineering* course, and the faculty development workshop<sup>17</sup>. The freshman 2008-2009 and 2009-2010 S-STEM scholars were cohorts of the corresponding STEP grant participants and interacted with each other in ENGR 1050 and many lived in the same residential hall for engineering freshmen (ERC), which was inspired by the initial work on the STEP project, though not funded by the grant.

### *Courses*

Introduction to Engineering CoE offers *Engineering 1050: Introduction to Engineering (ENGR 1050)*, which has been expanded under the NSF STEP project. This two hour credit course is designed to assist freshman engineering students academically and professionally. The course provides in-depth information on the types of engineering, career opportunities, degree programs, assistance in the career decision processes, the basics of the engineering design process, and reinforcement of the importance of communication, study habits, teamwork and continued professional development within the engineering profession. Students were required to maintain a design and professional development journal, attend a career fair and work on a team based design project. All 20 freshman S-STEM scholars were required to enroll in the class in fall 2008, and the eight freshmen from the 2009 cohort were enrolled.

Chemistry 1201 All 2008 S-STEM freshmen scholars enrolled in CHEM 1201 in the fall semester except for two students who took the honors equivalent of the course. The mean GPA in chemistry for this freshman S-STEM cohort was 2.91 for this course. Only 5 students in the 2009 S-STEM freshman cohort enrolled in CHEM 1201 in the first year at LSU, and the mean GPA in chemistry for this cohort was 3.34.

Math LSU placed students into appropriate level math classes based on the student's ACT math score and the departmental placement test score, therefore both freshmen cohorts were enrolled in a range of math courses from algebra to differential equations during their first year. Overall, the 2008-2009 S-STEM freshman mean GPA for math courses was 3.07 (number of courses taken by all scholars during both semesters = 31), with all but three students making at least a "C" or better. The S-STEM 2009 freshman mean math GPA was 3.13 (number of courses taken by all scholars during both semesters = 15), with one student not passing the first semester calculus class.

Physics Enrollment in physics classes for freshmen engineering students was either in *PHYS 1101: Introduction to Physics* and/or *PHYS 2101: Physics for Technical Students*. The fall 2008 cohort had a mean physics GPA of 2.64 (number of courses taken by all scholars during both semesters = 11). For the fall 2009 cohort, the mean physics GPA was 2.50 (number of courses = 10). It should be noted that two students in this cohort received "F's" in PHYS 1100, and one student enrolled in the PHYS 2102 course, earned an "A".

### *Engineering Residential College (ERC)*

Ten of the 22 freshmen 2008 S-STEM scholars were housed in the ERC, a residence hall for freshmen engineering students. ERC students are required to take three of the designated ERC courses in math, physics, chemistry or English. Several faculty members instructing these designated courses have participated in the NSF STEP supported Faculty Development Workshops and Learning Communities. Several of the designated ERC courses included onsite tutoring and review sessions, academic advising and personal develop activities throughout the semesters. Engineering industry recruiters and engineering alumni visit students in the ERC to discuss career opportunities, the engineering community, and professionalism in engineering. Faculty and advisers in each engineering department visit the students in the ERC to present the curriculum including concentrations, electives, scholarships and graduation data.

### *Motivational Seminar Series*

2008-2009 Professional Skills Series In addition to coursework, the S-STEM scholars were required to attend monthly seminars during the academic year. The fall 2008 series consisted of four presentations that covered skills needed for attaining employment. Speakers from the university and industry participated in seminar talks. The details of all S-STEM sponsored series are given in Appendix 1.

A new motivational seminar series was introduced in the spring of 2009 and consisted of seven presentations during the semester. To ensure that the S-STEM cohort would be available for this seminar, a new, non-credit course, ENGR 2050, was developed, and the S-STEM students registered for the course so that a common day and time was open during the semester. The seminar series featured successful local and national LSU women and minority graduates who serve as role models for the S-STEM scholars.

The speakers included experts from wellness, career services and academic success fields to help the students to grow holistically, not only as engineers but as adults. The seminar topics covered balancing life and academics, community service, leadership, graduate school, entrepreneurship, science research and teamwork. The final meeting of the students featured a relaxed chat with graduating engineering students as a means of passing along wisdom (Appendix 1 Table 1).

2009-2010 Professional Skills Series The fall 2009 seminar series consisted of six seminars covering many of the previously offered topics, but the material was presented as either a refresher or expansion of prior seminars. Also, the students invited to participate were expanded to include other Diversity Program Scholars and the under-represented students served by the program office.

The spring 2010 seminar series consisted of six seminars including a “book club” seminar, graduate school information and a panel discussion on internships and expectations. The book club used *Outliers* by Malcolm Gladwell’s as a winter reading assignment and focus of discussion, and the goals were to have students consider their criteria for success; realize what is required for them to reach their goal; and develop relationships with other engineering students. Two other seminars, internships and graduate school, utilized panel presentations consisting of current students and practicing engineers and were highly rated. Two professors from two universities were invited to speak at seminars as part of the recognized speaker component. Christine Grant, Associate Dean, North Carolina State University, presented on engineering ethics based on her NSF funded work and Wakeel Idewu, Assistant Professor, Virginia Military Institute and recent PhD graduate of LSU spoke about graduate school (Appendix 1 Table 2).

2010-2011 Academic and Professional Seminar Series The fall 2010 seminar series revisited some of the same topics that had been covered in previous semesters since there were a number of new scholars, and several other topics were added to appeal to the scholars who were advancing in their curriculum. A five hour workshop was developed and held to help the scholars identify and build their leadership skills. Lead project engineers from ConocoPhillips participated in this workshop as engaged members and professionals who could speak on leadership philosophy and professional goals. This included a lunch time presentation. To

develop the globally minded engineer, the seminar “The Places You Can GEAUX” was added to introduce various opportunities to study abroad for a semester or summer and to get involved with Engineers Without Borders.

The spring 2011 seminar series started with the return of the “book club” seminar, and it featured the book *Linchpin: Are you Indispensable* by Seth Godin. The book club used the book as a winter reading assignment, and the scholars meet at the beginning of the semester discuss and present their impressions of the book and evolving culture of work. The seminar on job skills was based on the video series JobStart 101, and it was presented in four weekly mini-sessions facilitated by the staff. Two other seminars repeated favorite topics from the previous year, internships and graduate school, and they were held as panel presentations consisting of current students and practicing engineers (Appendix 1 Table 3).

2011-2012 Academic and Professional Seminar Series The fall 2011 seminar series started with an event to cover the details of resumes and interviewing skills. This was followed with the digital portfolio seminar that showed students how to create and build a professional website. This was an active seminar, and participants used online resources to design their website, supplement resume information, demonstrate communication skills and showcase technical abilities. The “Making the Grade” seminar served as both a motivational talk and a presentation of skills that lead to improved academic performance. The remaining three seminars were designed to increase networking among the scholars (Appendix 1 table 4).

The spring 2012 seminar series started with the return of the “book club” seminar, and it featured the book *EntreLeadership* by Dave Ramsey. This book was chosen to link with two of the LSU Engineer characteristics, entrepreneurial spirit and leadership. Another key seminar was the Engineering Diversity Leadership Workshop that included the DISC<sup>®</sup> personality leadership assessment. The participants received a detailed report on their personality type, (dominance, influence, steadiness and conscientious), and they learned how to work with different personality types. Two other seminar sessions addressed networking with corporate representatives and alternate career paths for engineers (Appendix 1 Table 4).

2012-2013 Academic and Professional Seminar Series The 2012-2013 seminar topics were selected based on feedback from previous years. With a large number of scholars graduating the topics focused on leadership, job seeking skills and new career skills. A key note speaker, Chris Hogan, was brought in to motivate and build awareness about leadership and the importance of being people oriented. Prior to major time for fall recruiting and interviewing, the program sponsored two seminars covering the topics of effective networking and resumes. The spring semester started with the annual winter reading discussion utilizing the book *QBQ; the Question Behind the Question* by John G. Miller, and the short session series JobStart 101 was provided as means to prepare students for internship and permanent career positions (Appendix 1 Table 5).

#### *Tutoring and Advising*

S-STEM Scholars were also offered enhanced academic support through expanded tutoring, coordinated study groups and academic advising. Expanded tutoring was provided through several sources, the College of Engineering, Office for Diversity Programs, and the Center for Academic Success. There was a combined support of up to 20 tutors that assisted with

engineering and math courses. Engineering 1050 fostered the formation of the coordinated study groups. Also, many of the S-STEM scholars were able to secure housing in the freshman Engineering Residence College (ERC) that provided onsite tutoring.

Each scholar was also required to meet with the staff approximately once per month or more frequently if the student was experiencing challenges. Each student meeting covered critical areas for being a successful student, and the staff member utilized a “Retention Interview Form” and current student academic records. Areas discussed included intellectual, social, physical, spiritual and emotional well-being. If a particular concern was identified during the interview, the staff advisor would help develop a plan of action.

### *Employment*

The optional summer jobs program for the S-STEM scholars was developed to help the students develop “real life” exposure to the engineering field of their choice. The first component encouraged students to prepare and develop job skills prior to their initial summer job, and this was done primarily through the ENGR 1050 and ENGR 2050 courses. The scholars were encouraged to register for training workshops through the Center for Academic Success’ START Program, which trains students in several computing areas: web development and programming, multi-media and graphics, productivity software and operating systems.

The second component involved making contacts with potential employers and working with LSU Career Services so students can be matched with internships that will provide valuable experience in their field of engineering. Unfortunately, economic conditions hindered the placement of the 2008 freshman cohort in the engineering sector at the end of their freshmen year. Seven students chose to either pursue academic coursework or return to other jobs that are available during the summer. One student was placed as an engineering intern with a major engineering firm with local corporate headquarters, and one student was able to intern with a company in an international location.

At the end of the spring 2010 semester, the S-STEM scholars had chosen a variety of paths for the 2010 summer. Four of the scholars were offered and accepted internships for the summer. To help address the lack of engineering internships for first and second year students, the project staff compiled a directory of Research Experiences for Undergraduates (REUs) and provided weekly updates to the scholars. Three of the scholars were able to participate in REUs, and the remaining students enrolled in summer courses and/or work in non-internship positions.

With respect to summer 2011 work experiences, the 24 scholars who returned in fall 2011 reported on their expectations prior to the end of the semester. Nine of the scholars accepted internship positions prior to the end of the spring 2011 semester and at least four scholars participated in NSF funded research experiences for undergraduates.

There were 24 S-STEM scholars in spring 2012, and eight of the students graduated during the year. Six of the graduates had either accepted engineering positions or anticipated offers in the near future. The other two students plan to pursue graduate studies in engineering at LSU. The 16 returning scholars reported that they had accepted internships (50%), REU (12%), enrolled in summer classes (31%), and/or had other jobs (44%).

Table 9. GPA data for the all scholarship participants grouped according to eligibility and status.

	<b>Graduates Cumulative GPA</b>	<b>Continuing Cumulative GPA</b>	<b>Left LSU Cumulative GPA</b>
Funded scholars	3.44 (n=25)	3.01 (n=11)	NA
Unfunded scholars	3.27 (n=5)	2.51 (n=4)	2.24 (n=14)

There were 11 S-STEM scholars who graduated during the 2012-2013 academic year, eight of the scholars had accepted engineering positions prior to graduation and the remaining three were actively seeking employment in engineering and/or considering engineering graduate school.

### **Assessments and Outcomes**

The S-STEM program was primarily assessed using student academic performance and program elements surveys completed by students at the end of the each semester. A total of 58 students were participants in the scholarship with 36 students maintaining scholarship eligibility until the end of the program or graduation. The retention and graduation rates were calculated for the freshmen cohorts, upper-level students, and all participants. Additionally, comparisons were made between students who were funded scholars through graduation/the end of the program and those who lost eligibility (academic drop, major change or enrollment change) at some point before graduation.

#### *Academic Assessment All Participants*

To evaluate the academic performance of all scholars regardless of the scholarship eligibility, the cumulative GPA was recorded for the last semester the student attended LSU. At the conclusion of spring 2013 semester the mean GPA for all 59 students was 3.03 (s.d. 0.65) and ranged from 4.00 to 1.80. Of the 36 students who maintained eligibility (funded scholars), the mean cumulative GPA was 3.31 (s.d. 0.40). The mean cumulative GPA for the 23 students who lost scholarship eligibility (unfunded scholars) was 2.51 (s.d. 0.74). The GPA information for each group was further categorized according to graduates, currently enrolled and left the University before graduation (Table 9). Five unfunded scholars graduated, and of these four had lost scholarship eligibility due to a change of major outside of the College of Engineering. All four of the unfunded scholars who were continuing toward their degree were engineering majors and had scheduled graduation dates.

#### *Academic Assessment Freshmen 2008 Cohort*

The S-STEM 2008 freshman cohort mean GPA for each semester and the cumulative GPA at the completion of each year at LSU were calculated and included students who were placed on scholarship probation during the semester (Table 10). The first-year, mean cumulative GPA was 2.91 for the S-STEM 2008 freshman cohort and compares well with the 2008-2009 academic year GPA of 2.77 for all freshman engineering majors at LSU. After the first fall semester, six of the students were placed on scholarship probation due to cumulative GPA's less than 2.75. None of these students were able to satisfactorily improve their GPA's after the spring 2009 semester,

Table 10. GPA data for the freshman S-STEM 2008 and 2009 cohorts summarized.

	<b>1<sup>st</sup> Year Cumulative GPA</b>	<b>2<sup>nd</sup> Year Cumulative GPA</b>	<b>3<sup>rd</sup> Year Cumulative GPA</b>	<b>4<sup>th</sup> Year Cumulative GPA</b>	<b>5<sup>th</sup> Year Cumulative GPA</b>
2008 Cohort	2.91 (n=22)	2.99 (n=11)	3.18 (n=8)	3.06 (n=8)	3.00 (n=5)
2009 Cohort	3.12 <sup>1</sup> (n=8)	3.42 (n=4)	3.26 (n=4)	3.92 (n=2)	-

<sup>1</sup> Some students enrolled and received credit in 2009 summer courses.

and their scholarships were not renewed. Also, one student not previously on scholarship probation had a cumulative GPA <2.75 at the end of the first year. He/she was not placed on scholarship probation since the student took degree path courses during the summer that improved his/her GPA. The 2009-2010 academic year GPA data for the cohort indicates that as a group, the students were challenged academically, and the mean second year cumulative GPA was 2.99. Three of these students had cumulative GPA's <2.75 for the fall 2009 semester, and were placed on scholarship probation with funding for the spring 2010 semester. At the conclusion of the spring 2010 semester, none of these students was able achieve the criteria GPA to maintain the scholarship, and their scholarships for fall 2010 were not renewed.

During the 2010-2011 academic year, the remaining eight scholars from this first cohort maintained their S-STEM scholarship throughout the year. Only one student entered scholarship probation status after the fall 2010 semester, but the student was able bring the cumulative GPA to >2.75 after the spring 2011 semester.

The 2011-2012 academic year marked the senior year for this cohort, and two funded scholars graduated in May 2012. Overall, the academic performance for the 2008 cohort remained high with a 3.06 mean GPA, and the graduates had a mean GPA of 3.44. Individually, three of the scholars have cumulative GPA's that have dropped below 2.75.

The six remaining scholars from the 2008 freshmen cohort continued in engineering for the 2012-2013 academic year. One of these scholars was no longer funded after two semesters of low academic performance. Three of these scholars graduated during the year, and the mean GPA at graduation for the 2008 cohort was 3.30.

#### *Academic Assessment Freshmen 2009 Cohort*

The S-STEM 2009 freshman cohort GPA for each semester was examined, and the mean cumulative GPA at the completion of the first year at LSU were calculated and included students who were placed on scholarship probation during the year (Table 10). The fall 2009 freshman cohort performed well during fall 2009 with mean cumulative GPA of 3.22 (n=8), and only one student did not meet the 2.75 GPA requirement and was placed on scholarship probation effective spring 2010. This student did not meet the criteria at the end of the spring 2010 semester, and their scholarship was not renewed fall 2010. Overall, this cohort continued to perform well at the end of the spring 2010 semester with a cumulative GPA of 3.12. One student had a cumulative GPA <2.75 at the end of spring semester and was on scholarship probation for fall 2010.



Table 11. GPA data for the upper-level S-STEM cohorts, three years were summarized.

	<b>1<sup>st</sup> Year Cumulative GPA</b>	<b>2<sup>nd</sup> Year Cumulative GPA</b>	<b>3<sup>rd</sup> Year Cumulative GPA</b>	<b>Graduation Cumulative GPA</b>
2008 Cohort	3.38 (n=4)	3.21 (n=3)	-	3.42 (n=2)
2009 Cohort	3.37 (n=5)	3.50 (n=4)	3.47 (n=2)	3.42 (n=5)
2010 Cohort	3.38 (n=12)	3.31 (n=9)	3.28 (n=7)	3.40 (n=8)
2012 Cohort	3.33 (n= 7)			3.51 (n=3)

\*One scholar was added in 2011-2012 year and the data was combined with the 2010

The 2009 freshmen cohort was in good academic standing at the conclusion of their second year, and this included the student who was on scholarship probation for fall 2010. It should be noted that one scholar from this cohort changed majors at the end of the fall 2010 semester.

The third year for the 2009 freshmen cohort has had mixed academic performance with two scholars performing at a high level and two scholars falling below the academic criteria. These two scholars were placed on scholarship probation and were no longer qualified academically at the end of the spring semester. This left only two active scholars from the 2009 freshmen cohort and they graduated at the four year mark with 3.92 mean GPA.

#### *Academic Assessment Upper-level Cohorts 2008, 2009, 2010 and 2012*

The 2008 upper-level S-STEM scholars have performed well academically (Table 11), and as a group they had a cumulative GPA of 3.21 at the end of the spring 2010 semester. Two of these students graduated in the 2009-2010 academic year with a mean GPA of 3.42, and both received and accepted employment offers with leading corporations. The 2009 upper level cohort performed well, and two of the scholarships were extended for a third year. At the three year mark, all of the upper-level scholars in the 2009 cohort had graduated, and the mean GPA for this group was 3.42.

The 12 scholars who were added to the program at the beginning of the fall 2010 semester included students who were at the sophomore, junior and senior levels and only one student changed majors out of engineering. The lone student who was added in spring 2012 was included in the 2010 cohort since he was at approximately at the same academic point as that cohort. Overall, the 12 students performed well (Table 11), and this is indicated by a mean cumulative GPA of 3.28 at the end of the program. As of May 2013, eight scholars from this cohort had graduated, and the mean GPA at graduation was 3.40.

In fall 2012, seven additional scholars were added and three of them were seniors. The mean GPA of this cohort was 3.33, and the three graduates had a 3.51 GPA.

#### *Seminar Assessments*

The S-STEM students completed a survey at the end of the spring 2009 semester evaluated specific topics covered in the Professional Skills Seminars (Appendix 1). They were also requested to rate the seminar series overall, to report various activities and to provide comments.

Each student was requested to rate each seminar topic for interest and application on a Likert scale, with 1 being least interest or no application and 5 being the highest interest or application. The mean results were calculated for both interest and application. The highest rated topics were the inspirational talk with Coach Travis Mays, 4.8 and the informal chat with the graduating engineering students, 4.8. Typically, the interest and application ratings for the topics matched closely, although the Career Expo exhibited the biggest difference with a 4.1 rating on interest and only at 3.5 rating on application. Students were also requested to report on various activities that would impact their academic success, professional development and overall balance of life. The activities reported on also relate to the topics covered in ENGR 1050 and ENGR 2050. As freshman, the 2008 cohort was actively participating in many of the career services and academic assistance programs. It is interesting to note that 59% of the students reported that they believed that amount of time (mean = 13.3 hours/week) devoted to studying outside of class was adequate. This indicates a possible disconnect between hours studying and the drop in the mean spring 2009 GPA (2.71) compared to the fall 2008 GPA (3.08).

Likewise, S-STEM students from all cohorts completed semester surveys for fall 2009, spring 2010, fall 2010 and spring 2011 that had them rate the seminars, report on their various activities, and provide comments. Overall, the fall 2009 series was rated 3.7 both in interest and application, and no particular topic scored higher than another. The spring 2010 series had an average interest rating of 4.1 and application rating of 3.9, and two seminars were highly rated. The “Interviewing Skills” session was rated 4.4 for interest and 4.0 for application, and the “Successful Internship” session received ratings of 4.4 for interest and 4.5 for application. The fall 2010 and spring 2011 surveys were converted to an electronic format and completed online. Overall, the fall 2010 series was rated 3.2 for interest and 3.0 for application on a scale of one to five with the “Interviewing Skills” seminar receiving the highest ratings of interest, 3.6, and application, 3.4. The spring 2011 seminars were rated 3.4 for interest and 3.3 inspiration overall. The most favorable ratings were given to the “Women Impacting Style in Engineering” event that emphasized appropriate business attire and career networking. The scholars rated the event a 4.3 for interest and 4.5 for application.

In response to requests from scholars and diverse students to hold an in-depth leadership workshop, the program teamed with the LSU Office for Campus Life and ConocoPhillips to develop and hold a workshop on leadership and goals. The workshop covered leadership myths and principles, leadership styles, leadership philosophy (presented by ConocoPhillips lead project engineers), goal setting, leadership goals, and turning goals into action. A total of 32 students, consisting of S-STEM scholars and other engineering students, attended the workshop. The students were from all College of Engineering majors, were primarily juniors (48%), members of engineering student organizations (92%) with 56% holding an officer position and 68% female. The survey included questions on whether the workshop helped them in several areas specific to leadership and goals and overall aspects of the workshop (Figure 13). Compared to the standard seminars, this particular workshop received much better rating with majority of the responses 4 or greater, and the positive elements will be utilized to plan future seminars that target upper level students. Also, the value of the workshop was measured by 82% of the participants agreeing or strongly agreeing with the statement “I would recommend this workshop to my friends” and only 6% disagreeing.

Another leadership workshop was conducted in March 2012 based on the feedback from the first in-depth leadership workshop. The workshop utilized the DISC<sup>®</sup> assessment to identify four personality types, understand leadership strengths/weakness, understand own personality type and start the participants thinking about how to work with different personality types. The post event survey indicated that workshop rated over a 4.0 (1-5 Likert scale) for each of the objectives.

#### *Academic Activities and College Life Assessments*

Activities for all S-STEM cohorts were reported for the fall 2009, spring 2010, fall 2010 and spring 2011 semesters. It should be noted for the 2009-2010 academic year there were positive increases in the utilization of the Engineering Communication Studio, jobs offers from companies through Career Services, and study hours self-reported as adequate (68%) at 16.3 hours on average. The increase in the study hours did not appear to correlate to an increase in academic performance. The mean spring 2010 GPA for all S-STEM scholars was 2.79. For the 2010-2011 academic year, there was an increase in the students utilizing resources that would help them with placement in career positions. For the fall 2010 Career Expo, 90% of the scholars reported attending this event. Also, the scholars as a group reported even a higher level of adequate study hours at 83% for both the fall 2010 and spring 2011 semesters, and this was in line with mean semester GPAs of 3.16 and 3.20, respectively, for all S-STEM scholars.

#### *Retention and Graduation Assessments*

Retention of students in engineering is a primary goal of the project, and of all 22 students who were part of the S-STEM 2008 freshmen cohort, only three changed majors during the first year, one in a STEM discipline and two in other fields. One student transferred to a smaller university at the end of the fall semester, but he continued to major in engineering. This yields a first year retention rate of 86%. This compares favorably to the 11 year historical CoE retention rate of 73% and the 2007/2008 academic year retention rate of 74%. Of the fall 2008 cohort, 91% remained in a STEM discipline and 95% were enrolled in LSU at the end of the spring 2009 semester. Of the six students who were not been able to maintain the required GPA of 2.75, all returned to LSU as engineering/construction management majors for the fall 2009 semester. The funded 2008 freshmen cohort totaled eight students entering the fourth year of college in fall 2011, thus yielding a scholarship retention rate of 36%. From this funded cohort, five scholars graduated with an engineering degree within five years and the remaining three students were on track to graduate at six years. Of the 14 participants who were dropped from the S-STEM program, one student has graduated and five were retained as engineering/construction management majors at LSU through the spring 2013 semester. Overall, the five year combined retention and graduation (May 2013) in engineering/construction management for the 2008 freshmen cohort was 64%.

The 2009 freshmen cohort had eight students, and at the end of the spring 2010 semester, two students changed their major from engineering. Both students indicated they would be changing out of STEM disciplines, but they enrolled for fall 2010 classes at LSU. A third student was no longer eligible to enroll at LSU due to poor academic performance. This yielded a first year retention rate of 62.5%. At the end of the second year, one student changed their major out of engineering and this lowered both the scholarship and engineering retention rate to 50%. In fall 2012, two of the scholars were no longer funded since they did not meet the academic minimum

GPA, but both students are continuing in engineering. Two (25%) of the 2009 freshmen scholars graduated at four years. Thus, the four year combined retention and graduation rate was 50% for the 2009 freshmen cohort.

There have been a total of 29 upper level S-STEM scholars who have entered the program between fall 2008 and fall 2012. During these five years, two scholars changed majors out of engineering/construction management and one scholar transferred to another university. A total of 18 upper level scholars had graduated at the end of the scholarship program (May 2013). Three students graduated during the 2009-2010 academic year, four during the 2010-2011 academic year, five during the 2011-2012 academic year and six during the 2012-2013. The remaining eight scholars were continuing in engineering. This yielded a retention rate of 89.7% and a graduation rate of 62%. These graduates have entered the engineering field in permanent positions or enrolled in graduate school.

### *Personal Impacts and Outcomes*

The true impact of the S-STEM Scholarship program goes beyond reportable grades and graduation rates. Throughout the course of five years of the scholarship and seminar series scholars have commented on information they have received. The comments below were collected from scholars and best express the importance of the program.

*“Continue the great seminars; they are all very informative and played a big role in deciding my future.”* Upper level scholar, BS EVEG and current NSF Graduate Research Fellow.

*“It was great! The reason I am where I am today is because of this program. I was able to grow and develop into a professional because of all the seminars and leadership talks.”* Freshman Scholar 2009 BS ChE and current medical school student.

*“The inspiring seminar was the one based on the book Outliers. It not only allowed you to see how success and hard work are closely related, but it was also very good to connect with other scholars.”* Upper level scholar, BS CE and current graduate student.

*“Investments: Many people and organizations have invested in me getting an engineering degree. My first summer in college came as a scholarship from Summer Scholars Program at LSU. It is designed to give minority students a chance to get familiar with the university before the hustle and bustle of that first fall semester. It gives a family oriented atmosphere amongst the student in the program. I was able to make close friends at the start of college. After starting the fall semester, I received the S-STEM scholarship. That helped the burden of paying for the meal plan. Not long after that I received (another) scholarship. As grateful as I was to have money to assist with college costs, it does a lot when you get to meet the person who is investing in you...I couldn't let an investment like that go to waste.”* Freshman Scholar 2007 who was unfunded midpoint and BS EE December 2013.

### **Concluding Summary**

The S-STEM scholarship program supported a total of 59 LSU engineering students in the form of scholarships and programming during the five years that awards were made. Of these students, 36 (61%) maintained scholarship eligibility until graduation or the end of the program in 2013. By the end of the program 44% of the scholarship participants graduated with an engineering/construction management degree and 51% graduated from the University within a five year time frame. This rate compares favorably with the 2007 CoE freshmen cohort rate of 37.2%. It is anticipated that another 22% of S-STEM participants will graduate with engineering degrees over the next year (May 2014). The number of underrepresented S-STEM scholars was proportionally higher than the overall CoE enrollment and the scholar graduation rate was higher. **Overall, the five year combined retention and graduation (May 2013) in engineering/construction management for the S-STEM program was 69%.**

It is anticipated that the scholarship structure and programming support will be applied to other scholarship programs regardless of funding sources. This includes the selection, timing for funding students and process as well as targeting programming towards leadership and building connections.

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**APPENDIX 1**  
**Seminar Series Topics**

Table A-1. The S-STEM 2008-2009 seminar series focused on professional skills.

<b>Topic</b>	<b>Title</b>	<b>Presenter</b>	<b>Affiliation</b>
Career Services and Resumes	“Getting Started Early”	Don Howard, Associate Director	LSU Career Services
Career Fair 101	“Be Effective”	Julie Harris	LSU Engineering Diversity Programs
Interviewing Skills	“Making the Best Impression”	Del Dugas and Robert Douglas	ExxonMobil
Engineering Professional Licensure	“P.E. or Not to P.E.”	Donna Sentell	LAPELS
School and Life Balance	“How to Excel at LSU ...and Still Have a Life.”	Diane Mohler	LSU Center for Academic Success
Community Involvement	“Community Engagement”	Jan Shoemaker	LSU Center for Community Engagement, Learning and Leadership
Campus Involvement	“Leadership, Involvement and Balance”	William Gunn	LSU Campus Life
Graduate School	“Why Graduate School for Engineers?”	Panel Discussion	LSU
Business of Engineering	“Engineering Entrepreneurship”	Panel Discussion	Local Industry & Business Leaders
Teamwork & Individual Goals	“Are you a Team Player?”	Travis Mays	LSU Women’s Basketball Assistant Head Coach



Table A-2. The S-STEM 2009-2010 professional skills series featured leaders from LSU and the local community.

<b>Topic</b>	<b>Title</b>	<b>Presenter</b>	<b>Affiliation</b>
Welcome & Expectations of Scholars	“The Meeting of the Elite”	CoE Staff	LSU CoE
Career Services & Resumes	“Career Essentials I”	Susan Feinberg	LSU Career Services
Career Networking, Career Expo	“Career Essentials II”	Career Services Staff	LSU Career Services
Nutrition & Fitness	“Health & Fitness for Success”		LSU Wellness Center & University Recreation
Mid-semester Academic Improvement	“Search & Rescue”	Bill Dabney	LSU Center for Academic Success
Advice from graduating students	“Take a Breath”	Students	LSU
What it Takes to Succeed	“Outliers: The Story of Success”	Diversity Staff & Scholars	LSU
Resumes & Interviewing Skills	“Interviewing Skills with ExxonMobil”	Del Dugas	ExxonMobil
Academic Success	“CAS My Style”	Bill Dabney	LSU Center for Academic Success
Graduate School	“After I Get My BS... Graduate School?”	Wakeel Idewu, Alumni & Current Graduate Student Panel	Virginia Military Institute and various
Internships	“How to Have a Successful Internship”	Joe Myers & current students	ConocoPhillips & LSU
Ethics	“Engineering Ethics: Building Blocks for Success.... Tearing Down Walls of Stress”	Christine Grant	North Carolina State University

Table A-3. The S-STEM 2010-2011 professional skills series featured leaders from LSU, alumni and corporate sponsors.

<b>Topic</b>	<b>Title</b>	<b>Presenter</b>	<b>Affiliation</b>
Careers2Geaux	Careers2Geaux	Susan Feinberg	LSU Career Services
Budgeting	Mind Over Money	Emily Burris	LSU Student Financial Center
Resumes & Interviewing Skills	“Interviewing Skills with ExxonMobil”	Del Dugas	ExxonMobil
Academic Success	“Getting Ready for Mid-Terms”		LSU Center for Academic Success
Class Scheduling	“What are You Taking?”	Scholars students	NA
Leadership Skills	“Engineering Leadership Workshop”	David Dessauer & Trisha Dixon	LSU Campus Life & ConocoPhillips
Global Engineering	“The Places You Can GEAUX”	Paige Davis, Jessica Addison, & Kimberly Bowman	LSU Encounter Engineering, LSU study Abroad (Student) and Engineers Without Borders
Elements of Professional Success	“Linchpin: Are You Indispensable?”	Diversity Staff & Scholars	LSU
Developing & refining job skills	JobStart 101	Video series Facilitated by staff	Business Roundtable
Graduate School	“After I Get My BS... Graduate School?”	Alumni & Current Graduate Student Panel	Various
Internships	“How to Have a Successful Internship”	Jeremy Baldrige & Natalie Guillot	ConocoPhillips & OxyChem

Table A-4. The S-STEM 2011-2012 professional skills series featured leaders from LSU, alumni and corporate sponsors.

<b>Topic</b>	<b>Title</b>	<b>Presenter</b>	<b>Affiliation</b>
Resumes & Interviewing Skills	“Interviewing Skills Deep Dive”	Alfred Johnston	BP America
Digital Portfolio (two sessions)	“Building a Digital Portfolio”	Sarah C Jones	LSU Office for Diversity Programs
Setting Goals	“Scholars Breakfast”	Jada Lewis, Scholars students	LSU Office for Diversity Programs
Academic Excellence	“Making the Grade”	Wakeel Idewu,	Virginia Military Institute
Enhancement Programs and Scholarships	“Outstanding Applications”	Shanea’ Morrison	LSU McNair Program
Finals Preparation	“End of Semester Wrap-up”	Staff	Office for Diversity Programs
Entrepreneurship & Leadership	“EntreLeadership”	Diversity Staff & Scholars	LSU Office for Diversity Programs
Corporate Networking	“How to Effectively Network”	Joan Gallagher	LSU Career Services
Alternative Careers	“Alternative Career Paths for Engineering Students”	Martin Feldman, Professor	LSU Department of Electrical & Computer Engineering
Leadership	Engineering Diversity Leadership	Patricia Mithcen, Jennifer Farque	LSU Human Resources, ConocoPhillips

Table A-5. The S-STEM 2012-2013 professional skills series featured leaders from LSU, alumni and corporate sponsors.

<b>Topic</b>	<b>Title</b>	<b>Presenter</b>	<b>Affiliation</b>
Leadership & Teamwork	“The Necessity of People”	Chris Hogan	Dave Ramsey Speakers Group
Resumes & Interviewing Skills	“Interviewing Skills Deep Dive”	Alfred Johnston	BP America
Corporate Networking	“How to Effectively Network”	Jesse Downs	LSU Career Services
Setting Goals	“Scholars Breakfast”	Sarah Jones	LSU Office for Diversity Programs
Personal Accountability	<i>QBQ! The question Behind the Question</i>	Diversity Staff and Scholars	LSU Office for Diversity Programs
Developing & refining job skills	JobStart 101	Video series Facilitated by staff	Business Roundtable
Finals and next steps	“End of Semester Wrap-up”	Staff	Office for Diversity Programs