

The WCOE International Initiative: A Bold Requirement for Engineering Undergraduates

Prof. Zaida M Gracia, Texas Tech University

Zaida Gracia is the Assistant Academic Dean for the International Programs at the Whitacre College of Engineering. As part of the International Program's staff for the WCOE, she joined TTU in 2013 and since then she has established many collaboration agreements with international universities to increase the recruitment of graduate students, and increase and diversify the opportunities for the engineering undergraduate students to fulfil their international requirement. In March 2016, Zaida became an ELATE@Drexel (Executive Leadership in Academic Technology and Engineering) alumnus presenting an institutional action project titled "Raiders Abroad: A sustainable model for globally competent engineering students" that was adopted by the WCOE. The project, based on the work of cross functional teams established a strategic plan for 2016-2020 focusing on student participation and assessment on programs abroad and the development of a travel scholarship fund for students under financial hardship in the college. Mrs. Gracia brings twenty five years of experience as a mathematics' professor at the Sacred Heart University in Puerto Rico. She led successful initiatives to increase minorities and women representation in STEM fields such as federal grant funded projects, school teacher seminars, the launching of a science journalism program and the establishment of an annual Science Festival. Zaida is currently working on her Ph.D. on Higher Education Leadership at TTU, has a Master in Science from Michigan State University and a Bachelor's in Science from the University of the Sacred Heart in Puerto Rico.

Dr. Albert Sacco Jr., Texas Tech University

Al Sacco Jr. is dean of the Edward E. Whitacre Jr. College of Engineering at Texas Tech University in Lubbock Texas. Before coming to Texas Tech, he was the George A. Snell Distinguished Professor of Engineering and the director of the Center for Advanced Microgravity Materials Processing at Northeastern University. He flew as the payload specialist on the Space Shuttle Columbia on shuttle mission STS-73 in 1995. The 16-day mission aboard Columbia focused on materials science, biotechnology, combustion science and fluid mechanics contained within the pressurized Spacelab module. Born in Boston, Mass., Sacco completed a bachelor's degree in chemical engineering from Northeastern University in Boston in 1973, and a doctorate in chemical engineering from the Massachusetts Institute of Technology in 1977. He then joined the faculty of the Worcester Polytechnic Institute, becoming a full professor and serving as the chair of the chemical engineering department from 1989 until 1997, when he joined the faculty at Northeastern. He has consulted for numerous companies in the fields of catalysis, solid/gas contacting, zeolite synthesis and applications, and equipment design for space applications. Sacco has more than 192 publications (including book chapters) in the areas of carbon filament initiation and growth, transition metal and acid catalyst and their deactivation, and zeolite synthesis, and he has been the principal investigator on more than \$24 million in research grants. Using his space flight experience, Sacco has given more than 300 presentations to approximately 27,000 K-12 teachers and their students as a means to motivate students to consider careers in science and engineering. He is a fellow of the American Institute of Chemical Engineers and in 2004 was elected to the International Academy of Astronautics

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Abstract

In order to prepare our graduates for the ever-changing global landscape, in the Fall 2013, the Whitacre College of Engineering (WCOE) at Texas Tech University (TTU) established the International Experience Initiative (IEI), a bold initiative that requires all undergraduate students in the college of engineering to complete an experience abroad before graduation. In addition, the IEI, aligned with the college's funding priorities for years 2013-2018, contributes to increase the college global presence by increasing graduate international enrollment, increasing research related activities and support with international partners, expanding international partnerships, and strengthening academic quality and reputation. To support the IEI, the college developed a strategic plan for years 2013-2018. The plan included a budget increase from \$100,000 to \$800,000 per year for the international programs office to invest in office staff and operations. New priorities for 2013-2018 consisted in 1) the refocusing on academic cost neutral offerings abroad after identifying the need to create more internships, research and service programs abroad, 2) a program assessment plan and 3) the development of a travel scholarship fund for students under financial hardship which currently represent a 27% of the undergraduate population.

Results from these priorities from 2013-2016 include: 1) on academic offerings and enrollment, a 565% increase in abroad enrollment was achieved by growing from 79 to 525 students. By 2016, many programs in new locations were created, mostly non-faculty led study abroad programs and also many internship opportunities abroad. 2) A new assessment plan of all program components is in its implementation and testing phase and will be ready to be used by January 2017. 3) A travel scholarship fund has been developed, consisting of endowed funds and donations/gifts. A cost comparison study of our programs abroad vs on campus costs was used together with data from the financial aid office on the amount of students under financial hardship to determine how many students needed financial aid and what programs /locations were the most affordable. It was concluded that the Americas is the most affordable option for summer programs and the Asia/Africa/Australia/NZ regions are the most affordable option for semesters abroad. The average cost of airfare equivalent to \$1,500 was used to calculate the travel scholarship budget needed per year. Given 150 students per year are under financial hardship in the college and each would receive \$1,500 on average, \$225,000 per year is the minimum needed amount in the travel scholarship fund. As a result of these findings, the WCOE established as funding priority for 2016-2020 to develop at least a \$5 million travel scholarship endowed fund to guarantee the sustainability of this wonderful initiative.

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Introduction

In order to prepare our graduates for the ever-changing global landscape, in the Fall 2013, the Whitacre College of Engineering (WCOE) at Texas Tech University (TTU) established the International Experience Initiative (IEI), a bold initiative requiring all undergraduate students in the WCOE to complete an academic experience abroad before graduation. The Initiative, aligned with the college's funding priorities for years 2013-2018, would increase graduate international enrollment, increase research related activities and support, expand international partnerships, and strengthen academic quality and reputation, as program staff would develop programs abroad by establishing partnerships with international universities (Sacco, 2016).

To support the IEI, the college developed a strategic plan for years 2013-2018. The plan included a budget increase from \$100,000 to \$800,000 for the international programs office to invest in office staff and operations. New priorities for 2013-2018 consisted in 1) the refocusing on academic cost neutral offerings abroad after identifying the need to create more internships, research and service programs abroad, 2) a program assessment plan and 3) the development of a travel scholarship fund for students under financial hardship which currently represent a 27% of the undergraduate population. The following sections discuss each priority, their need, development and preliminary results up to early Spring 2017.

Priority 1: Creating cost neutral new programs in diverse modalities

From 2013-2016, the yearly budget and annual expenditures for the International Programs Office increased from \$100,000 to almost \$800,000 (see appendix 1), responding to the college's funding priorities. The office staff increased from a one staff member office to a five staff members program's office (representing a total salary expenditures increase of 568%). Staff travel expenditures also increased accordingly.

From 2013-2016 most of the international programs expenditures accounted for salaries and benefits, staff travel, and an international recruitment program. As a result, student participation in abroad programs grew from 79 students in 2013 to 525 in 2016 (565% increase from 2013-2016 in abroad enrollment). For year 2017, a 731 student participation is expected based on the number of engineering students enrolled in the college (not counting the international students who are not required to go abroad). Figure A shows the participation of students abroad from 2013-2017.

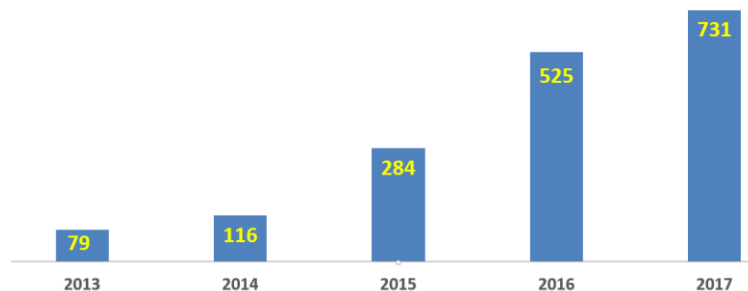


Figure A. Number of participants abroad.

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As the program's staff assessed results on enrollment and learning global outcomes from 2014-2016, a need to re-prioritize efforts was identified during the Spring 2016. New goals for 2016-2020 were established including the refocusing of academic offerings abroad. The leadership team recognized a need to diversify the options for students abroad in terms of modalities such as study abroad, internships, and research and service programs abroad. In order to make programs cost neutral (when compared to studying on campus), many programs in locations outside Europe were created. Countries in Central and South America offered more affordable programs and many customized programs were created with universities for non-faculty led study abroad and research, and internships with companies. Other locations in Asia, Africa, New Zealand and Australia were expanded throughout reciprocal exchange agreements for semester stays and internships/service programs in those locations were identified as well.

Figure B shows the participation of students divided in three regions: the Americas, Europe and Africa/Asia/Australia/Pacific and the Middle East. Europe is still the favorite location for study abroad, but the WCOE has grown participation in Central and South America by 300% from 2013-2016 and a 1000% growth is expected from 2013-2017. The latter is a response to the fact that 87% of the internships offered abroad in 2017 are in Brazil, Chile, Argentina, Costa Rica and other Central and South America locations.

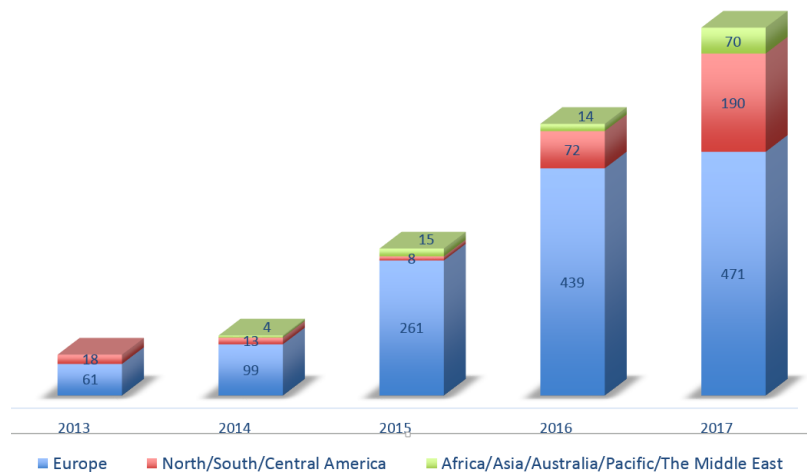


Figure B. Students by region

A key priority for the planning of programs to be offered from 2016-2020 was the program modality distribution. Gradually, the plan contemplated a shift from faculty led study abroad traditional offerings to a diversified portfolio of programs around the globe to expose the students to practicing engineering in a global context. Figure C shows the original projection of participation from 2016-2020 and adds the current trend for 2017 in the highlighted column.

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		2017 Current Numbers	2017	2018	2019	2020
Study Abroad	Faculty Led	45%	65%	50%	45%	25%
	Non Faculty Led	30%	20%	25%	25%	30%
Research		1%	5%	8%	10%	15%
Internships		20%	5%	9%	10%	15%
Service		4%	5%	8%	10%	15%

Figure C. Student enrollment per modality projections.

As shown on figure C, if the programs to be offered in 2017 get full enrollment, the target goal of decreasing study abroad programs to a 75% by 2018 will be reached in 2017. Non faculty led programs are replacing faculty led, to decrease program costs and increase cultural immersion. Faculty led programs are used to promote participation into new countries such as South Korea and Japan. Internships for 2017 represent a 20% of the opportunities offered at 2017, surpassing the goal for 2020. More research programs need to be develop as we only offer a 1% of total offerings right now.

Priority 2: Program Assessment

The staff identified the need to assess the participation of students abroad in different aspects. An assessment plan was created for 2016-2020 that included the assessment the WCOE impact on the IEI and the assessment of students' global skills after the participation in an abroad experience, the ABET learning outcomes on experiences abroad and general program satisfaction.

Program assessment was divided in three components: Academics, agreements and media/marketing. To assess the academic components, during the Spring 2016 the international office staff formed cross functional teams of stakeholders composed of faculty, department chairs, students and advisors, to work with office staff in the design and promotion of new programs. Metrics were defined by assigning student participation goals per year and per modality (Figure C). Participant enrollment was the key tool to measure the achievement of this goal.

The effectiveness of each program will be evaluated in terms of student's success (grades, portfolios, supervisor's evaluations and participant evaluations). The number of students receiving travel expenses scholarships or mobility grants money will be assessed too. The cross functional teams worked on the enrollment projections for 2016-2020 (shown on figure A), in the projections of the distribution of students by regions (shown in figure B) and the projections by enrollment by modality (shown in figure C). Once these projections were established, it was

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decided what locations were going to be targeted and with what type of programs. Figure D shows targeted participation by region and modality for 2017.

Year 2017	Europe	Americas	NZ/Aust/Asia/Africa
Percentage of participants per Region	64%	26%	10%
Year 2017	Europe	Americas	NZ/Aust/Asia/Africa
Percentage of Study Abroad per Region	89%	50%	61%
Percentage of Internships/Research per Region	10%	46%	18%
Percentage of Service per Region	1%	4%	21%

Figure D. Enrollment for 2017 by region and by program modality.

To assess the academic content of programs abroad, there are many tools that are used. For study abroad, the course evaluation is used. For internships, research and service programs students are required to prepare and submit a portfolio (when seeking credit). Appendix 2 shows the rubric to evaluate internships abroad. All participants for 2017 will complete an online assessment survey that was created in the Fall 2016. The form contains a four parts: general information, ABET learning outcomes, global learning outcomes and general program satisfaction. See Appendix 3. Preliminary results will be analyzed in the Fall 2017.

To assess the effectiveness of current agreements and to determine the need for new agreements, an agreements plan was established for 2016-2020 with specific metrics (goals) supporting this priority. The program staff will revise outcomes per year to target specific barriers and present solutions or revisions to the plan. For example, based on finding from Figure C, it was determined that more research programs need to be developed. Currently four research agreements are been created with universities in Brazil, Mexico, and Argentina.

Another key component that has to be monitored continuously is the international WCOE website <http://www.depts.ttu.edu/coe/careers/students/iep/programs.php>.

The college's media and communication staff works with the office staff to assess the international websites effectiveness by the number of visits, the preferred pages, by the number of students that can navigate the process and enroll in the programs without requesting guidance appointments. The site needs to be updated frequently as programs change per semester and summers, student's testimonials are added, etc.

Priority 3: Travel Scholarship Fund

The third and last priority established for 2016-2020, was the development of a travel scholarship fund to be given out to those students under financial hardship, for which re-prioritization or reallocation of funds and resources was required. When the IEI was established in 2013, a way for students to get exempted from this requirement was created. International

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student, students in the military service, students with health conditions or disabilities, students under financial hardship and others were some of the criteria that allowed students to be exempted from the international requirement (see Appendix 4 for the exemption form). Until 2015, any student who requested to be exempted claiming financial hardship was normally exempted if they received \$15,000 or more on financial aid. As program staff grew and practices were revised, it was decided that the exemption process needed to be revised as well since student's financial status should not be a limiting factor on a degree requirement.

In Spring 2016, 27 students who requested to be exempt under financial hardship were called in to meet with the program's leadership staff and as a result these students traveled abroad during the summer 2016 aided by a travel scholarship given by the WCOE. After the enrollment of 27 students under financial hardship in our abroad programs, the international programs staff identified the need to develop a travel fund to allow all students in the college under financial hardship to go abroad. Ideally, endowed fund income transferred to our operational funds would guarantee the availability of the funds for future use (Barr & McClellan, 2011).

The International Program staff investigated the TTU definition of students under financial hardship. According to Ms. Becky Wilson, Senior Managing Director at the Student Financial Aid & Scholarship Office at TTU, the university's definition of financial hardship is: "students to be "high need" or in a financial hardship if the estimated family contribution calculation is in the Pell Grant eligibility range" (personal communication, July 11, 2016). To determine the number of students in the college under financial hardship, B. Wilson (personal communication, April 20, 2016), provided spreadsheets for academic years 2011-12, 2012-13, 2013-14 and 2014-15, showing all types of financial aid awarded to every student in the college by the student's identification number. The information per student included federal grants, federal loans, state aid, scholarships, loans, etc.

It was found (see Appendix 5) that about 27% of the undergraduate engineering student population, equivalent to 240 students per year, were under financial hardship from years 2011-2015 (the WCOE counts engineering students from sophomore year on). Because some of the students under financial hardship could also opt out of the international requirement based on other criteria (military service, health conditions, some transfer students, etc.) it was estimated that about 150 students per year would request to be exempted from the international requirement based only on the financial hardship criteria.

During the academic year 2014-15, the Development Office staff of the WCOE had negotiated a donation of \$100,000 designated as a travel scholarship fund to be given to students for travel expenses. As previously discussed, a year later the program managers per regions (there are three in the office staff) sent 27 students under financial hardship abroad funded by this donation. The participants were very excited to learn they could have a chance to go abroad under a travel scholarship and were advised to participate in recently created programs that were more affordable. Instead of opting out of the requirement, the students enrolled in study and internship programs abroad and received on average about \$1,200 on travel scholarship money to offset some of the program's costs or travel expenses (Cadiz, 2016). See Appendix 6 for a detailed

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description on fund distributions. The travel locations the students visited included Brazil, Chile, Costa Rica, Spain and Puerto Rico. The total awarded to the 27 students was \$32,373 and this money was transferred to the international's program budget from the dean's office budget. Post participation assessment included student portfolios, interviews, videos and written statements. The most outstanding finding was that the students who participated in internships abroad were able to get many interviews at our job fair for paid internships in the US or full time jobs after graduation. These students manifested that they had not been getting interviews or job offers after attending previous job fairs.

To estimate the average amount to be awarded as a travel scholarship for each student under financial hardship, a cost comparison table (Appendix 7) was created showing the average costs on low, medium and high cost programs already available to the students (Cadiz, Haseley & Wright, 2016, July 22). The table included data divided by 3 regions: the Americas, Europe and Asia/Africa/Australia and New Zealand. The equivalent costs at TTU were also included.

	AMERICAS	EUROPE	ASIA/AFRICA/AUSTRALIA/NZ
SUMMER PROGRAMS			
Average tuition & housing cost difference in \$	-1332	1616	1229
Average total cost difference*	635	3750	4495
SEMESTER PROGRAMS			
Average tuition & housing cost difference in \$	-1525	2249	-3121
Average total cost difference*	2075	5749	912
*Includes books, airfare, living expenses and other related costs			

Figure E: Average cost difference by regions between programs offered abroad & the same program at TTU campus.

Figure E shows the average cost difference per region between programs abroad and TTU programs. Tuition and fees for established programs in Central and South America cost less on average than TTU summer programs and for semesters abroad, the Americas and the Asia/Africa/Australia/NZ regions cost less than spending the semester at TTU. Because of airfare and living expenses abroad, there is always an additional cost to the students when compared to studying on campus. It was concluded that the Americas is the most affordable option for summer programs and the Asia/Africa/Australia/NZ region is the most affordable option for semesters abroad. Based on cost comparison data, it was decided that \$1,500 (equivalent to the average cost of airfare) would be the amount used to calculate the travel scholarship budget needed per year. Given 150 students per year are under financial hardship and each will receive an average aid of \$1,500 per student, \$225,000 per year is the minimum needed in the travel scholarship fund.

For the sustainability of the International Requirement Initiative, all students under financial hardship should receive a travel scholarship to participate in an abroad experience. Given the

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importance for the WCOE to maintain a sustainable requirement that allows all students to participate regardless of their socio-economic background, during Spring 2016 the international programs staff made the recommendation to the college leaders to establish a funding priority for 2016-2020 to develop at least a \$5 million travel scholarship fund. This fund would guarantee the sustainability of the International Requirement Initiative. The recommendation included a development plan to raise the money for the travel fund from endowed funds, and from gifts and donations. Typically, endowment funds in the college yield a 4.5% revenue per year. To generate \$225,000 per year from endowed funds, \$5 million need to be endowed. The college current endowments total about \$50 million, and their generated income is used for student scholarships based on merit, faculty endowed positions and renovation of buildings and laboratory facilities (see endowment income in Appendix 8). Based on the recommendation, the Dean together the WCOE development office staff, established the development of an endowment fund for travel scholarships as one of the college's funding priorities.

The re-prioritization of resources has been established and since May 2016, the development office staff has been working together with the international program's staff seeking endowment funds and gifts from donors. For the academic year 2016-17, there will be at least \$250,000 for the travel fund available to cover travel expenses for students under financial hardship. This fund will be transferred into the international programs budget under gifts and endowment income (See appendix 9).

The international program staff is confident that the WCOE has established the development of the travel scholarship fund as a funding priority for 2016-2020 and big efforts are invested in this endeavor. The team is proud of the obtained results and clear that the leadership staff in the college understands that without this fund, the International Requirement Initiative is at risk, since 27% of the college undergraduate population is under financial hardship and students need this fund to comply with their graduation requirement.

Conclusion

The WCOE at Texas Tech University is the only engineering college at a state university that has established an international experience as a graduation requirement for the undergraduate engineering students. This bold requirement represented a challenging initiative for the college that required a huge budget investment and the development of a strategic plan in order to create a successful and sustainable requirement. The strategic plan, aligned with the college and the university globalization goals, consisted of three main priorities related to enrollment and program modalities, assessment and the creation of a travel scholarship fund as discussed in this paper.

This initiative aims to place our college of engineering as a national leader on STEM global education, by graduating engineers that practice their profession in a global context, that provide solutions with different approaches, can tolerate change, diversity and adapt to different cultural settings. With the program's success the college expects to set the standard by which other engineering schools in the nation will strive to replicate.

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References

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San Francisco: Jossey-Bass.

Cadiz, M. (2016, July 15). Personal interview.

Cadiz, M., Haseley, A. & Wright, A. (2016, July 22). Personal interview.

Sacco, A. (2016, April 8). Personal interview.

Wilson, B. (2016, April 20). Personal interview

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Appendix 1

WCOE International Programs Office Budget 2015-16

WCOE International Programs Budget 2015-16		
Total Annual Expenditures	780,850	
Total Funding/Revenue Budgeted	675,850	
Total Other Institutional Funds	75,000	
Gifts/Endowment Income for Travel Scholarships (non recurrent)	30,000	
Total Annual Expenditures		Funds source
Salaries and fringe benefits (371000+129850)	500,850	42% State funds and 48% fees (placement & advising fees)
Promotional materials, marketing, etc.	15,000	Placement fees
Graduate International Recruitment Summer Program	100,000	Designated tuition for graduate recruitment
Staff Travel	125,000	Placement fees
Memberships, registration fees, etc.	10,000	Placement fees
Travel scholarship fund	30,000	Gifts/donations/endowment income
	780,850	
Total Funding/Revenue Budgeted	675,850	
State	209,250	State funds
Local designated tuition (tuition difference from what state charges)	25,000	Designated tuition for graduate recruitment
Fees (advise, labs, etc.)	441,600	Placement fees
Amount Covered by Non-budgeted funds	30,000	Gifts/donations/endowment income
Total Other Institutional Funds (Recruitment Summer Program)	75,000	Designated tuition for graduate recruitment
President's Office	25,000	Designated tuition for graduate recruitment
Provost Office	25,000	Designated tuition for graduate recruitment
Minority and Outreach Office	25,000	Designated tuition for graduate recruitment

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Appendix 2

International Internship Paper Grading Rubric - Credit

Performance Element	Level 5-4	Level 3-2	Level 1-0
Describes the Company	Provided a thorough description of the company (type of work performed, clients, market, etc.).	Mostly described a thorough description of the company (type of work performed, clients, market, etc.).	Poor description of the company (type of work performed, clients, market, etc.). Unclear what the company does
Outlines Job Duties	The author clearly articulated the type of work done on the coop; can even demonstrate growth of responsibility during the coop experience.	Somewhat explained the job duties and tasks performed on the coop.	Did not clearly explain the type of work completed on the coop.
Connection to Academic Study	Author clearly outlines how work performed connected to completed course work. Connects job activities to future courses and future employment desires.	Somewhat describes how the work performed built upon coursework conducted. Little effort to relate to future employment interests.	Did little to no connecting of job activities to academic course work and did not connect to future potential opportunities.
Cultural Reflection	Author clearly discusses their overall reflections while incorporating their observations and feelings.	Somewhat describes their reflections and feelings.	Did not clearly incorporate their cultural reflections.
Completeness of Thought and Organized Presentation	Responses to evaluation questions are very thorough. Paper flows and ideas are connected. Uses headings to organize thoughts.	Responses to evaluation questions need expansion. Paper not well organized; used topic sentences. Some structure.	Some or all of the evaluation questions are incomplete. Paper not well organized; do not use topic sentences. No structure.
Grammar and Spelling	Proper grammar is used throughout. Very few spelling mistakes.	Some grammar corrections are required. Occasional spelling mistakes.	Attention to proper grammar is lacking. Many spelling mistakes.

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Appendix 3

International Requirement Post Participation Survey

Part A: General

A1. Gender:

Male

Female

Prefer not to disclose

A2. Choose your engineering department

ME

ECE

IE

CheE

PE

CECE

CS

A3. When I was abroad I was a

Sophomore

Junior

Senior

A4. I went abroad in

Spring 2015

Summer 2015

Fall 2015

Spring 2016

Summer 2016

Fall 2016

Spring 2017

Summer 2017

Fall 2017

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A5. Choose your international experience modality

Study abroad
Research abroad
Internship abroad
Service abroad

A6. Choose the country where your experience abroad took place

Pop-down menu

Part B. Student Outcomes Engineering Accreditation Commission

Use the following scale to evaluate the following statements:

1. To a very little extent 2. To a little extent 3. To some extent 4. To a great extent

5. To a very great extent DK=Don't know/Not Applicable

B1. I was able to apply knowledge of mathematics, science, and engineering during my abroad experience.

B2. I was able to design and conduct experiments, as well as to analyze and interpret data during my abroad experience.

B3. I was able to function on multidisciplinary teams during my abroad experience.

B4. I was able to identify, formulate, and solve engineering problems during my abroad experience.

B5. I was able to acquire an understanding of professional and ethical responsibility during my abroad experience.

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B6. I gained understanding on the impact of engineering solutions in a global context during my abroad experience.

B7. I gained understanding on the impact of engineering solutions in an economic, environmental, and societal context during my abroad experience.

B8. I was able to recognize the need for engaging in life-long learning during my abroad experience.

B9. I gained knowledge of contemporary issues during my abroad experience.

B10. I was able to use the techniques, skills, and modern engineering tools necessary for engineering practice during my abroad experience.

Part C: Cultural-Global Skills/Competencies

Use the following scale to evaluate the following statements:

1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree

5. Strongly Agree DK=Don't know/Not Applicable

C1. I gained self-confidence after my abroad experience.

C2. I can adapt better to other cultures after my abroad experience.

C3. I understand the value of knowing a second language after my abroad experience.

C4. Studying/working abroad allowed me to understand the world is connected through a global economy.

C5. Studying/working abroad prepared me to practice engineering in a global context.

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C6. I have a larger respect for diversity after going abroad.

C7. I feel confident talking about my time abroad in an interview.

C8. I can identify and articulate the skills acquired from my abroad experience.

C9. I will use the skills acquired from my abroad experience in my engineering career.

C10. I feel a larger sense of responsibility in global matters after going abroad.

Part D: Program satisfaction

Use the following scale to evaluate the following statements:

1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree

5. Strongly Agree DK=Don't know/Not Applicable

D1. I was properly advised at the WCOE about the program I chose to participate.

D2. The housing facilities provided by my program abroad were satisfactory.

D3. The academic content of my program abroad was relevant to my education.

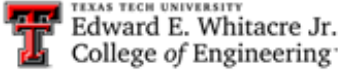
D4. Studying/working abroad made me more competent for the job market.

D5. I would recommend my program abroad to other students.

Please use the box below to share your experience, ideas for new programs or concerns you may have about the WCOE International Requirement.

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Appendix 4



Email Exemption Form and Documentation to: iep.coe@ttu.edu

International Program Requirement Exemption Form

*Do not print off form. Form must be filled out digitally and signed digitally. First save form, then complete the required fields.

First Name: Last Name:
R# Department:

I am seeking an exemption from the international program requirement, which is a WCOE graduation requirement. I claim an exemption from the requirement for the following reasons, please check all that apply:

- Financial hardship as demonstrated by FAFSA. Please provide FAFSA information.
- Health conditions that do not permit long-term travel without doctors care. Please provide a doctor's note.
- Other conditions such as, but not limited to, birth of children, responsible care of a family member, family hardship, etc... Please provide supporting documentation.
- A student visa that does not permit participating in a study abroad experience or an international student.
- A transfer student with 60 or more engineering or computer science hours **toward your degree plan** accepted by TTU as shown on degree works, or a second degree seeking student. You must provide a copy of your degree works. On degree works, **fallthrough** and insufficient courses do NOT apply toward the 60 credit hours. Please review with academic advisor, please have academic advisor sign off.

Total Hours Transferred: Academic Advisor:

- A student athlete whose athletic season prohibits extended travel.
- Substitution of another international experience satisfying the requirement. Please provide supporting documentation
- Other. To be reviewed and approved by the International Program Review Committee and the Executive Associate Dean for International Programs.

* If you claim more than one reason, you must provide all supporting documentation.*
Statement of justification. Please elaborate on the reason identified for the exemption. **You MUST provide all supporting documents and combined them into one file.** Please allow 30 days for review.

I understand that my request for an exemption will be reviewed by a committee and approved by the Executive Associate Dean for International Programs. The committee's ruling is final. Adobe recognizes all electronic signatures as legally binding. Digitally sign by clicking signature box.

TTU Student Signature (only) Date

*Email Exemption Form and Documentation to: iep.coe@ttu.edu

STOP: For Office Use ONLY Date:

Justification:

Approve Not Approved

Approve Not Approved

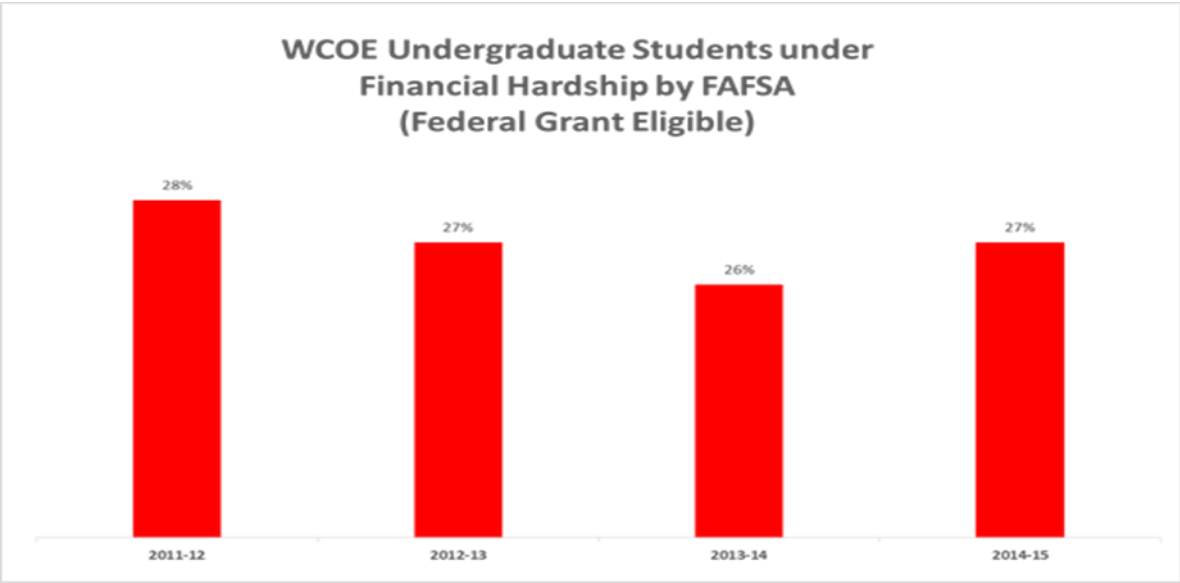
Assistant Academic Dean for International Program

Executive Associate Dean of International Programs

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Appendix 5

Percentage of students in the WCOE under financial hardship



The WCOE International Initiative: A bold requirement for engineering undergraduates.

Appendix 6

Travel Scholarship Fund Distribution 2015-2016

Program	Given \$ amount	Total students
Brazil Internship	11,450	6
Chile FSM	5,500	2
Seville	2,000	1
PR Internships	1,900	2
Costa Rica Tuition	9,000	9
Costa Rica SWE	2,522.60	7
TOTAL	\$32,372.60	27
	\$ amount per student/ratio=\$1,198.98	

The WCOE International Initiative: A bold requirement for engineering undergraduates.

Appendix 7

Cost Comparison on Average Abroad Costs per Region vs TTU costs

SUMMER	AMERICAS			EUROPE			ASIA/AFRICA/AUSTRALIA/NZ			TTU COST	TTU COST
	Low Brazil Internships (8 weeks)	Medium Chile Study Abroad (6 weeks)	High Colombia Study Abroad (4 weeks)	Low Germany Study Abroad (5 weeks)	Medium Greece Study Abroad (5 weeks)	High Ireland Research Abroad (8 weeks)	Low Malaysia Study Abroad (6 weeks)	Medium China Study Abroad (6 weeks)	High Australia Internships (12 weeks)	8 weeks	4 weeks
Tuition/program costs	\$ 2,500.00	\$ 3,650.00	\$ 4,500.00	\$ 1,825.00	\$ 2,500.00	\$ 5,180.00	\$ 2,750.00	\$ 6,500.00	\$ 7,490.00	2,222.00	2,222.00
Room/Board	\$ 1,600.00			\$ 2,500.00	\$ 5,180.00	\$ 8,550.00	\$ 1,200.00			3,270.00	3,635.00
TOTAL:	\$ 4,100.00	\$ 3,650.00	\$ 4,500.00	\$ 4,325.00	\$ 5,180.00	\$ 8,550.00	\$ 3,950.00	\$ 6,500.00	\$ 7,490.00	5,492.00	3,857.00
Books, transportation, other	\$ 1,500.00	\$ 600.00	\$ 500.00	500	600	800	800	1500	2400	1200	750
Airfare	\$ 800.00	\$ 1,500.00	\$ 1,000.00	1500	1500	1500	1500	1800	1800	0	0
TOTAL:	\$ 6,400.00	\$ 5,750.00	\$ 6,000.00	\$ 6,325.00	\$ 7,280.00	\$ 10,850.00	\$ 6,250.00	\$ 9,800.00	\$ 11,690.00	6,692.00	4,607.00
SEMESTER	AMERICAS			EUROPE			ASIA/AFRICA/AUSTRALIA/NZ			TTU COST	
	Low Puerto Rico Study Abroad (Politecnica)	Medium Chile Study Abroad (PUCV)	High Colombia Study Abroad (Uninorte)	Low Cyprus Study Abroad (Nicosia)	Medium Spain Study Abroad (TTU Seville Center)	High Ireland Study Abroad (University College Dublin)	Low Malaysia Study Abroad (Heriot-Watt)	Medium South Korea Study Abroad (Dongguk Univ.)	High Australia Study Abroad (LaTrobe Univ.)		
Tuition/Fees	\$ 5,393.00	\$ 5,393.00	\$ 5,393.00		\$ 4,634.00		\$ 5,393.00	\$ 4,014.00	\$ 4,014.00	5,393.00	
Room/Board	\$ 2,000.00	\$ 3,000.00	\$ 4,500.00	\$ 9,200.00	\$ 7,135.00	\$ 16,066.00	\$ 1,350.00	\$ 2,620.00	\$ 3,500.00	4,692.00	
TOTAL:	\$ 7,393.00	\$ 8,393.00	\$ 9,893.00	\$ 9,200.00	\$ 11,736.00	\$ 16,066.00	\$ 6,743.00	\$ 6,634.00	\$ 7,514.00	10,085.00	
Books, transportation, other	\$ 3,000.00	\$ 2,500.00	\$ 2,000.00	2000	2000	2000	1000	2000	4000	2810	
Airfare	\$ 800.00	\$ 1,500.00	\$ 1,000.00	1500	1500	1500	1500	1800	1800	0.00	
TOTAL:	\$ 11,193.00	\$ 12,393.00	\$ 12,893.00	\$ 12,700.00	\$ 15,236.00	\$ 19,566.00	\$ 9,243.00	\$ 10,434.00	\$ 13,314.00	12,895.00	

The WCOE International Initiative: A bold requirement for engineering undergraduates.

Appendix 8

WCOE Funding and Expenditures 2015-16	
Total Annual Expenditures	36,300,728
Total Funding/Revenue Budgeted	30,411,038
Total Other Institutional Funds	3,645,719
Gifts/Endowment Income	2,243,971
Total Annual Expenditures	36,300,728
Salaries	28,678,296
Operating	1,551,403
Renovation, Construction, Building Maintenance	1,026,147
Graduate Students Benefits/Waivers	1,248,736
Equipment/Maintenance	769,385
Research Support (grant matching/start-up, etc)	2,428,200
Travel (all non-grant related travel)	382,431
Development	216,130
Total Funding/Revenue Budgeted	30,411,038
State	19,920,442
Local (tuition difference from what state charges)	5,247,005
Fees (advise, labs, etc.)	5,243,591
Amount Covered by Non-budgeted funds	5,889,690
Total Other Institutional Funds	3,645,719
Indirect Return	1,536,095
Start-Up Funding	1,735,900
OLDE	122,283
Grad School Funding(fellowships)	197,383
Presidential Student Recruitment	10,800
Summer Incentive Funding	0
Graduate Advising fee	43,258

The WCOE International Initiative: A bold requirement for engineering undergraduates.

Appendix 9

WCOE International Programs Budget for 2015-16 and Projected Budget for 2016-2017

WCOE International Programs Budget 2015-16	\$	WCOE International Programs Projected Budget 2016-17	\$
Total Annual Expenditures	780,850	Total Annual Expenditures	806,748
Total Funding/Revenue Budgeted	675,850	Total Funding/Revenue Budgeted	710,000
Total Other Institutional Funds	75,000	Total Other Institutional Funds	75,000
Gifts/Endowment Income for Travel Scholarships (non-recurrent)	30,000	Gifts/Endowment Income for Travel Scholarships (non-recurrent)	250,000