



Kari Knutson Miller, Ph.D.

The 100,000 Strong in the Americas Innovation
Fund: Jumpstarting Strategic Higher Education
Partnerships and Student Exchange

Case Study: California State University, Fullerton

Presented at the annual meeting of FAUBAI, Belém, Brazil.

April 16, 2019

California State University System



- Largest 4-year university system in the U.S.
- 23 campuses
- 484,000 students
- 52,000 faculty and staff



By the Numbers

- Founded in 1957
- One of the largest of the 23 California State University campuses
- Approximately 40,000 students (Fall 2018)
- More than 274,500 graduates
- International students from 86 nations
- Offers 110 degrees (56 undergraduate and 54 graduate) from 8 colleges
- 241-acre campus
- Over 325 student clubs and organizations

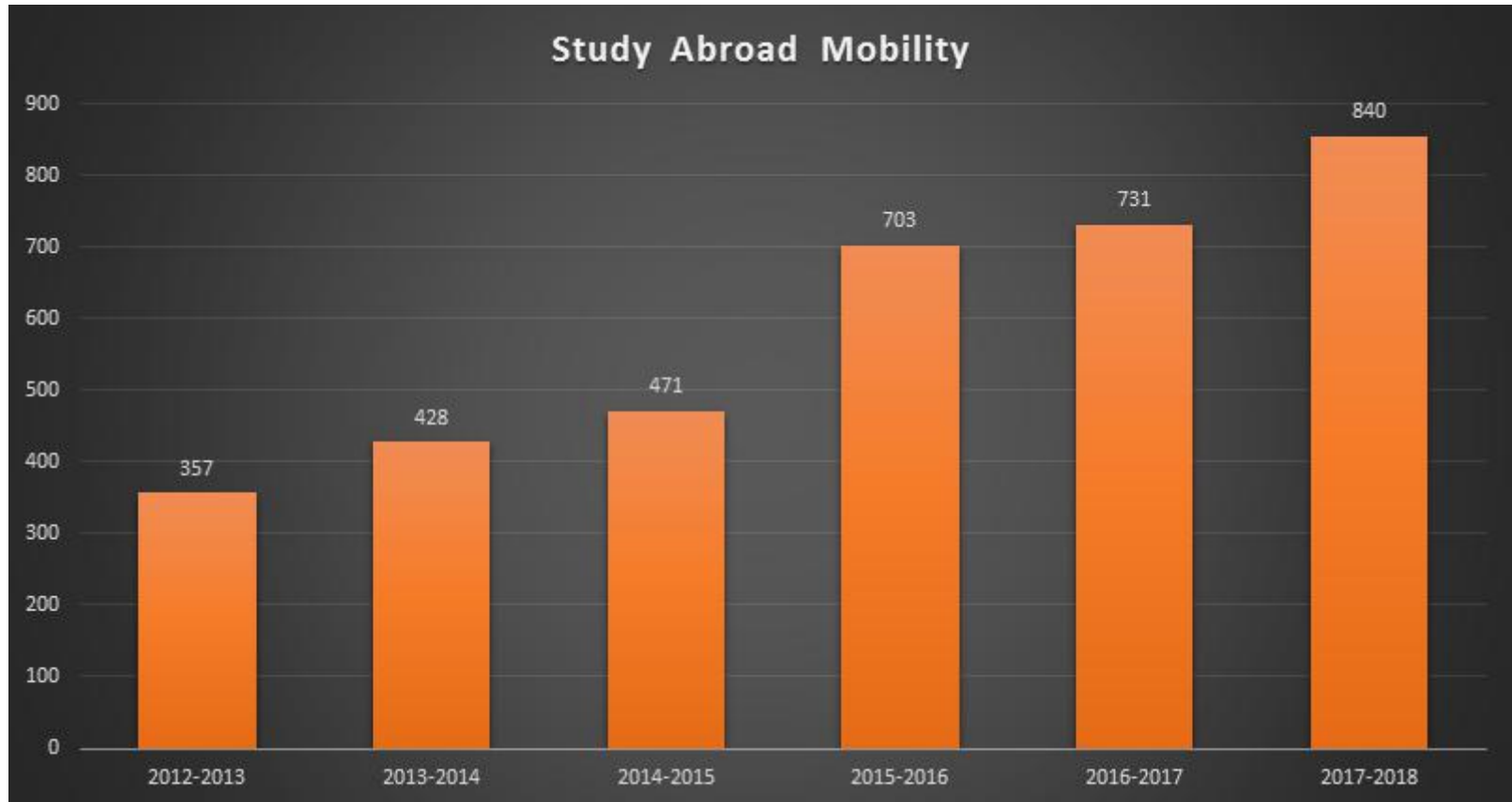
Cal State Fullerton

Demographics (Fall 2018)	Percentage
Hispanic/Latinx	41.5
Asian	20.9
White	20
International	7.6
Multi-Race	4
Unknown	3.8
Pacific Islander	.2
Native American	.1

Capacity Building

- Launch International Programs & Global Engagement unit
- Implement and extend President's Strategic Fund (PSF) program
- Register Generation Study Abroad commitment
- Engage in strategic outreach/partnership development with emphasis on Latin/South America and Asia
 - Brazil
 - Mexico
 - Vietnam
- Submit 100,000 Strong in the Americas proposal

Mobility Trends

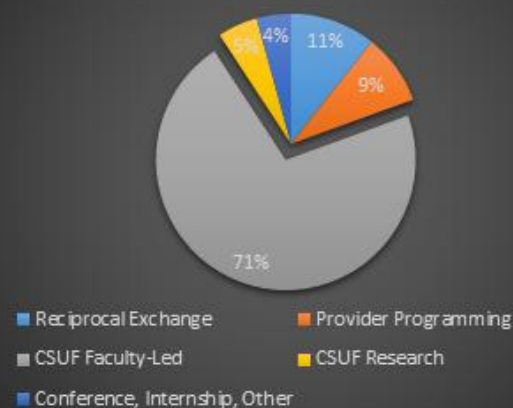


Program Portfolio

Program Length 2017-2018



Style of Program 2017-2018



100,000 Strong in the Americas Grant Proposal Development

- Strategic outreach/partnership development activities - **BRAZIL**
 - FAUBAI conference in Cuiaba, Brazil
 - 100,000 Strong in the Americas: Capacity Building Workshop II
 - NAFSA Latin America Forum
 - U.S.-Brazil Partnerships meeting @ Boston-based Consulate
 - U.S. Consulate in São Paulo
 - Brazil-based Education USA advisors
 - Subsequent international conferences
- Align potential project with 100,000 Strong in the Americas call and verify partner collaboration interest
- Submit 100,000 Strong in the Americas grant proposal in fall 2015

100K Partner



100,000 Strong in the Americas Grant Proposal Development

Cross-Campus Partners and Commitment

- Cal State Fullerton
 - International Programs & Global Engagement unit
 - AVP/SIO and key administrator/staff support
 - Office of Research and Sponsored Projects
 - College of Engineering and Computer Science
 - Dean's office
 - Faculty champion
 - College of Health and Human Development
 - Faculty advocate
- UNESP
 - President's office letter of support
 - International Affairs unit
 - SIO and three key administrators/staff
 - Instituto de Ciência e Tecnologia Sorocaba campus
 - Faculty advocate



CALIFORNIA STATE UNIVERSITY
FULLERTON



CALIFORNIA STATE UNIVERSITY
FULLERTON

100,000 Strong in the Americas Grant Overview

- **December 2015 award announced**
- **Support experiential STEM-focused mobility program**
- **First study abroad program for undergraduate students in the College of Engineering and Computer Science**
 - Provide high impact learning opportunities designed to improve skills needed to succeed as professionals in an increasingly diverse and international workplace
 - Address barriers including language, degree requirements, and cost
 - Address additional challenges including time to degree expectations, accreditation, and degree program requirements
- **Increase capacity of CSUF and UNESP Sorocaba to support U.S./Brazil mobility**

100,000 Strong in the Americas Grant Project Components

- Fullerton-based Summer International Research Institute (SIRI)
- Sorocaba/São Paulo-based International Symposium for Engineering Research (ISER) workshop

The ExxonMobil logo is displayed in a large, bold, red font.

The Competition #9, ExxonMobil Round Innovation Fund grants are awarded to:

California State University, Fullerton, California, U.S.

Partner: Universidade Estadual Paulista “Júlio de Mesquita Filho,” Campus de Sorocaba, Sorocaba, Brazil

Project Title: “Bilateral Exchange for Engineering Students”

The goal of California State University, Fullerton’s experiential STEM-focused international mobility program is to provide engineering students with high impact learning opportunities designed to improve the skills needed to succeed as professionals in an increasingly diverse and international workplace. The program will increase institutional capacity for CSU Fullerton and UNESP Sorocaba to support U.S./Brazil mobility by establishing a new partnership; creating study abroad opportunities for students; increasing staff experience; and developing a culture of international, Brazil-based bilateral exchange.



STUDENT INTERNATIONAL RESEARCH INSTITUTE (SIRI) POSTER PRESENTATION

California State University, Fullerton

International Programs & Global Engagement

SIRI Poster Invitation

You are invited to the Student International Research Institute (SIRI) poster presentation:

Thursday, July 28, 2016

3:00 - 5:00 p.m.

College of Engineering & Computer Science Quad ([campus map](#))

At the event, SIRI students will present posters showcasing the research they have engaged in during their time at California State University, Fullerton.

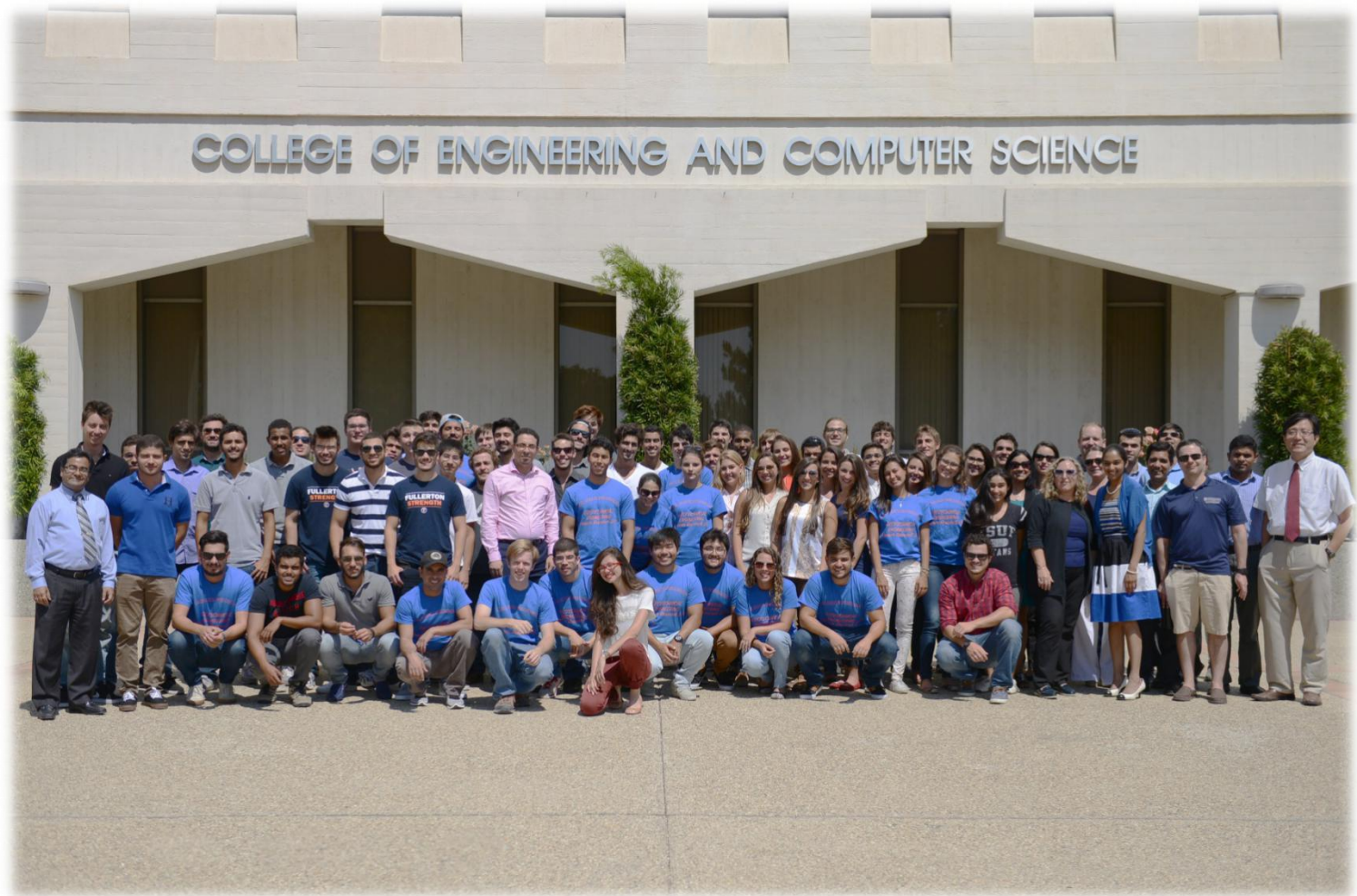
If you are able to attend, please **RSVP by July 22.**

RSVP Now

If you have any questions, please contact Jeni Lynch at jnlynch@fullerton.edu.











SAVE THE DATE

November 17-27, 2016

FALL RESEARCH CONFERENCE IN BRAZIL

This fall, CSUF students will have the opportunity to present original research, visit local industries, and network with field experts in São Paulo, Brazil.

This experience is ideal for those engaged in research and would like to go abroad.

Estimated cost is \$1,720, which includes airfare, hotel, conference registration, transfers, and site visits.

For more information, contact Leslie Chanthaphasouk at lchanthaphasouk@fullerton.edu



International Symposium on Engineering Research (ISER)

November 2016
Sorocaba, SP, Brazil



Time	Monday 21 st - November	Tuesday 22 nd - November
9:00	<i>"UNESP reception and information"</i> Prof. Eduardo Godoy, UNESP	<i>"Innovation in Green Sustainability"</i> Paula Valério - FIT
9:30	<i>"Brazilian Energy Sources"</i> Prof. Antonio Martins, UNESP	<i>"Automation with RFID"</i> Pedro Silva - FIT
10:00	<i>"Thin Film Production and Applications"</i> Prof. Steven Durant, UNESP	<i>"Brazilian and German Energy Matrixes"</i> – Hanna Seefeldt, Ruhr University, Germany
10:30	<i>"Smart Grid Technologies, Advantages and Challenges"</i> - Prof. Fernando Marafão, Prof. Wesley Souza, UNESP	<i>"Recycling Technologies - an overview of solid waste recycling"</i> – Karl Abude - Metso
11:00	<i>"Natural Disasters faced by the World in Recent Years"</i> – Prof. Binod Tiwari, CSUF	<i>"Waste management: energy recovery from solid waste"</i> – André Silva - Salmeron
Lunch	UNESP Restaurant	UNESP Restaurant
14:30	Poster presentation (UNESP and CSUF students)	



CSUF-UNESP Sorocaba: Bilateral Exchange for Engineering Students

PREFACE

This publication includes proceedings of the International Symposium on Engineering Research (ISER) organized at Universidade Estadual Paulista (UNESP) "Júlio De Mesquita Filho" Instituto de Ciência e Tecnologia Câmpus de Sorocaba on 21-25 November 2016. This symposium is an annual outbound activity of the California State University, Fullerton (CSUF) International Programs and Global Engagement (IPGE). The annual inbound international student research program of the IPGE the Summer International Research Institute (SIRI) was hosted at during Summer 2016.

The ISER program was generously supported by the 100K Strong grant, IPGE of the University Extended Education at CSUF, College of Engineering and Computer Science (ECS) of CSUF and UNESP. The faculty leads from CSUF are Dr. Binod Tiwari, Professor in the Department of Civil and Environmental Engineering and Director of SIRI and Dr. Beena Ajmera, Assistant Professor in the Department of Civil and Environmental Engineering. At UNESP, the lead faculty is Dr. Eduardo P. Godoy, Professor at UNESP Sorocaba Campus. The program would not have been possible without the support provided by Dr. Kari Knutson-Miller, Dean of University Extended Education and Associate Vice President, International Programs and Global Engagement, Dr. Susamma Barua, Interim Dean of the College of ECS, Ms. Christine Pircher-Barnes, Director of Global Engagement Strategic Initiatives and International Programs and Global Engagement, Ms. Juim Kim, Study Aboard Advisor, Ms. Shari Henderson, Study Abroad Associate Director, Ms. Abigail Segura, Special Projects Coordinator for IPGE, Mr. Jack Hobson, Study Abroad Director, Mr. Brendon Babish, Associate Director of Communications at University Extended Education. We would like to appreciate the support from Ms. Marti Hentschel for student travel authorization and bookings. The support provided by Dr. Joao Barros, Associate Professor in the Department of Kinesiology at CSUF in the preparation for the symposium is also greatly appreciated. Last but not the list, the symposium would not have been possible without the support of faculty mentors from CSUF – Drs. Lourdes V. Abellera, Beena Ajmera, Hakob Avetisyan, Yoonsuk Choi, Pratanu Ghosh, Sudarshan Kurwadkar, Charles H. Lee, Geoffrey Lovelace, Salvador Mayoral, Anand Panangadan, and Binod Tiwari.

This publication includes the abstracts of posters presented at the ISER. In addition to the published abstracts presented in the proceedings, there were two keynote lectures presented by Drs. Tiwari and Godoy. There were company visits and lectures led by industry leaders, as presented in the conference program.

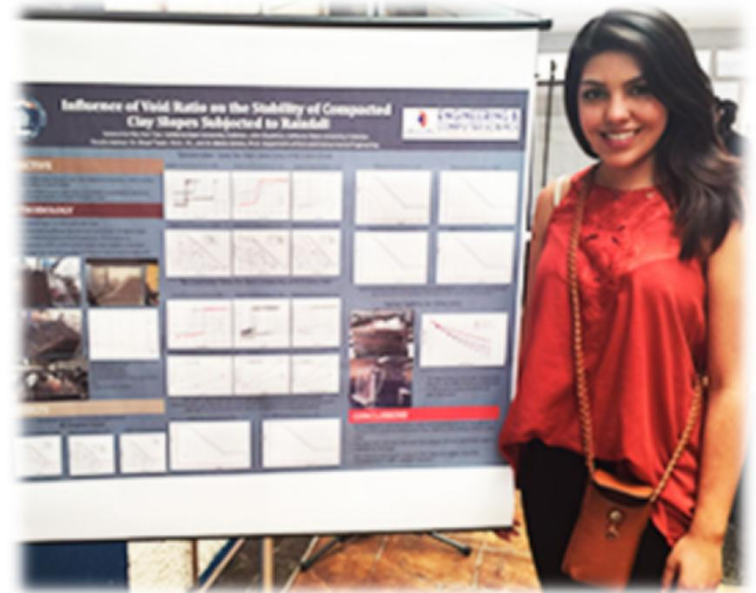
The organizers would like to thank all the student participants, their co-authors, and also their faculty mentors for partaking in ISER.



Table of Contents

1.	Multi-Valued and Multi-Terminal Nanoelectronic Devices using Fullerene	5
	• Harshvardhan Akolkar	
	• Faculty Mentor: Dr. Yoonsuk Choi	
2.	Analyzing Social Media Communications for predicting variation in Vehicle Miles Traveled	5
	• Niyati Bichu	
	• Faculty Mentor: Dr. Anand Panangadan	
3.	Influence of Void Ratio on the Stability of Compacted Clay Slopes Subjected to Rainfall	6
	• Yuliana Carrillo, John Stapleton, and Duc Tran	
	• Faculty Mentors: Dr. Beena Ajmera and Dr. Binod Tiwari	
4.	N-Elliptic K-Fibonacci XOR'd Curves for Symmetric Encryption	6
	• John Chou and Adarsh Mangina	
	• Faculty Mentor: Dr. Yoonsuk Choi	
5.	Scalable Design and Manufacturing of a Closed Cycle Direct Formate Fuel Cell	7
	• Ryan Hamilton	
	• Faculty Mentor: Dr. Salvador Mayoral	
6.	Simulating and Visualizing Binary Black Hole Mergers for Gravitational Wave Astronomy	8
	• Haroon Khan	
	• Faculty Mentor: Dr. Geoffrey Lovelace	
7.	Mechanically Stabilized Earth (MSE) Retaining Wall Design	8
	• Eric Kim, John Thurlo, John Stapleton, Shelley Rodriguez, and Rosalie Chavez	
	• Faculty Mentors: Dr. Beena Ajmera and Dr. Binod Tiwari	
8.	Experimental Studies on UV facilitated Photo-degradation of 2, 4 – Dinitrotoluene	9
	• Stephanie Lopez and Rebecca Becerra	
	• Faculty Mentor: Dr. Sudarshan Kurwadkar	
9.	Investigation of Mechanical Properties and Durability in HPC Using Natural Zeolite	10
	• Nidhi M. Modha	
	• Faculty Mentor: Dr. Pratanu Ghosh	
10.	Mathematical Model to Noninvasively Detect Dry-Eye Diseases	11
	• Trini Nguyen	
	• Faculty Mentor: Dr. Charles H. Lee	
11.	The Influence of NaCl Leaching on Undrained and Drained Shear Strength of Clays	12
	• Florentino Ostorva, Carolina Matosko, and Thais Hayashi Alves	
	• Faculty Mentors: Dr. Beena Ajmera and Dr. Binod Tiwari	
12.	Gamification to Promote Sustainable Transportation	12
	• Pritesh Pimpale	
	• Faculty Mentors: Dr. Anand Panangadan and Dr. Lourdes V. Abellera	
13.	Optimization Using Geographical Information Systems	13
	• Anvesh Reddy Motadoo, Megan Moscol, and Randall Clark	
	• Faculty Mentor: Dr. Hakob Avetisyan	
14.	Experimental Studies on Hydrolysis Rate of Selected Neonicotinoid Insecticides	14
	• Mari Shakir	
	• Faculty Mentor: Dr. Sudarshan Kurwadkar	

15.	Influence of Void Ratio, Slope Inclination, and Rainfall Intensity on Slope Stability of Compacted Clay Slopes	15
	• John Stapleton, Yuliana Carrillo, and Duc Tran	
	• Faculty Mentors: Dr. Beena Ajmera and Dr. Binod Tiwari	



100,000 Strong in the Americas Grant

Project Objectives and Outcomes

- **Increase US/Brazil study abroad opportunities aligned with STEM disciplines**, particularly engineering, that promote student engagement and efficient time to degree – **Achieved**.
- Enhance partnerships that **support sustainable mobility pathways focused on undergraduate student research activities and include service-learning and community-based program components** – **Achieved**.
- At least 5 non-BSMP students participate in SIRI 2016 – **Achieved (8)**; estimate 5-10 non-BSMP participants – **Achieved**; estimate 20+ BSMP participants – **Achieved (72)**.
- At least --20 UNESP students, including 5 SIRI ambassadors, will participate in ISER – **Modified to 15 UNESP participants based on UNESP expressed logistical capacity**.
- At least --20 CSUF/ECS students will participate in ISER 2016 – **Modified to 15 CSUF participants based on UNESP expressed logistical capacity**.

100,000 Strong in the Americas Grant

Project Objectives and Outcomes

- SIRI and ISER participants will participate in an enriched academic experience that includes undergraduate research, service-learning, and community engagement components – **Achieved.**
- This project will result in an increase of 0 to 20 CSUF students participating in Brazil-based UNESP programs specifically – **Modified to 15 participants based on UNESP expressed logistical capacity.**
- This project will result in 1 MOU between CSUF and UNESP Sorocaba – **MOU between CSUF and UNESP system signed.**
- This project will result in 1 bilateral exchange between CSUF and UNESP Sorocaba – **MOU template modified to include mobility; future mobility anticipated to relate to research activities and special session programs rather than traditional bilateral exchange.**

100,000 Strong in the Americas Grant

Project Objectives and Outcomes

- **Student Learning Goals and Outcomes**
 - IRB approval
 - Measures
 - CSUF High Impact Practice Student Experience Survey and modified versions of surveys used in two previously approved IRB applications
 - Type and impact of undergraduate research activities on academic and professional development (self-report)
 - Impact of service-learning and community-based experiences on personal, academic, and professional development (self-report)
 - Structured reflections linking course content to research experiences, service, and community-based experiences
 - Performance outcomes
 - Presentation of research findings
 - Published proceedings
 - Interviews with participating faculty and administrators

Institutional Impact



Case Study 2

California State University, Fullerton (CSUF), California, USA

Universidade Estadual Paulista (UNESP), São Paulo, Brazil

Universidade São Paulo – Instituto de Ciências Matemáticas e de Computação (USP-ICMC), São Carlos, Brazil

Universidade Federal Fluminense (UFF), Niterói, Brazil

Kari Knutson Miller, PhD

Associate Vice President, International Programs & Global Engagement

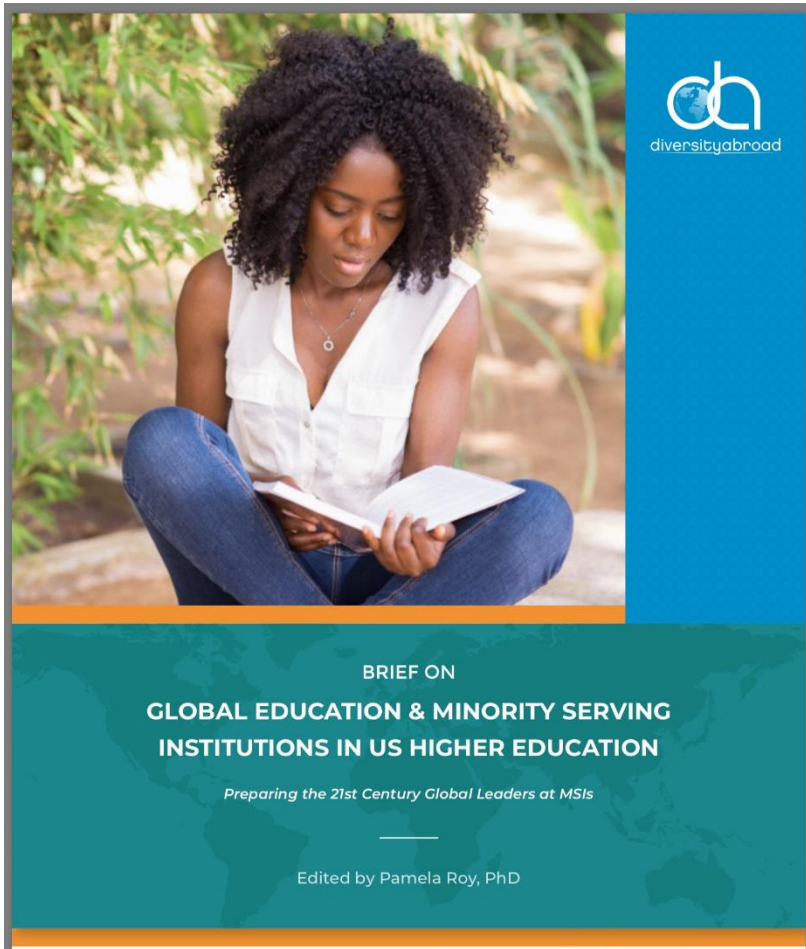
Senior International Officer, CSUF

Background

California State University, Fullerton (CSUF) identifies as being a “comprehensive, regional university with a global outlook.” The current strategic plan emphasizes promoting a “curricular and co-curricular environment that prepares students for participation in a global society” as well as programs and experiences that “advance students’ recognition of roles they play in an interdependent global community.” Additionally, the strategic plan calls for an increase in the percentage of students who participate in High Impact Practices, including study abroad. CSUF is designated a Hispanic Serving Institution (HSI) and recognized for its diverse student body. *Institutional commitments emphasize participation of first generation and culturally diverse students in study abroad as well as systematic and coordinated outreach and engagement with institutions of higher education in Latin and South America given the university’s HSI designation.* The Brazil Scientific Mobility Program (BSMP) provided opportunity for CSUF to enroll Brazilian undergraduate students in academic programs and courses on its campus. Related experiences enriched the curricular lens for all enrolled students and contributed to “internationalization at home.”

Actions associated with institutional commitment to increasing study abroad mobility included launching the International Programs & Global Engagement (IPGE) unit to enhance support for university initiatives, implementing and extending President’s Strategic Fund awards aligned with study abroad course development and student scholarships, registering as a Generation Study Abroad Commitment partner in spring 2015, and submitting a 100,000 Strong in the Americas grant proposal in fall 2015. The grant proposal addressed barriers frequently cited to study abroad participation including language, degree requirements, and cost. Additional challenges specifically associated with CSUF/Engineering and Computer Science student study abroad participation included time to degree expectations, accreditation and degree program requirements, and access to study abroad options that took these considerations into account.

Institutional Impact



BRIEF ON

GLOBAL EDUCATION & MINORITY SERVING INSTITUTIONS IN US HIGHER EDUCATION

Preparing the 21st Century Global Leaders at MSIs

Edited by Pamela Roy, PhD

ACCESS TO AND ADVOCACY FOR MOBILITY AT A MINORITY-SERVING INSTITUTION – CALIFORNIA STATE UNIVERSITY, FULLERTON

Dr. Kari Knutson Miller, Provost and Vice President for Academic Affairs, California State University, Fullerton

Jack Hobson, Sr. Director, Global Titans Center, University Extended Education and International Programs & Global Engagement, California State University, Fullerton

California State University, Fullerton is a comprehensive university accredited by the Western Association of Schools and Colleges. In the fall of 2016, the University enrolled over 40,000 students in 109 degree programs. Cal State Fullerton is designated as a Hispanic-Serving Institution (HSI), Asian American and Native American Pacific Islander (AANAPI) eligible, and generally recognized for its diverse student body.

Per its mission statement, Cal State Fullerton identifies as a “comprehensive, regional university with a global outlook.” The 2013-2018 strategic plan emphasizes promoting a “curricular and co-curricular environment that prepares students for participation in a global society” as well as programs and experiences that “advance students’ recognition of roles they play in an interdependent global community.” Additionally, the strategic plan calls for an increase in the percentage of students who participate in High-Impact Practices, including study abroad, as such practices are associated with engagement, retention, and increased graduation rates. Systematic and coordinated outreach with institutions of higher education in Latin America and Asia is emphasized given the university’s HSI designation and AANAPI

eligibility. Institutional commitments further emphasize the participation of first-generation and culturally diverse students in study abroad.

Actions associated with institutional commitment to increasing study abroad participation included the launch of the International Programs & Global Engagement (IPGE) unit to enhance support for university initiatives. Specifically, this launch included the reorganization and IPGE branding of offices including International Admissions & Outreach, Study Abroad, University Semester Abroad, American Language Program, and International Student Services.

Additionally, the institution registered as a Generation Study Abroad Commitment Partner. To significantly increase the numbers of students who study abroad, the institution pledged to increase opportunities for participation in study abroad through bilateral exchange partner agreements; build campus partnerships that increase curricular and co-curricular study abroad opportunities; provide training and support for colleagues interested in facilitating study abroad programs; enhance student advisement to effectively promote participation in the context of degree, personal, and professional development goals; provide information

Institutional Impact

1 Align mobility goals with university priorities and strategic plan goals

2 Engage in strategic partnership development

3 Consider heritage connections, proximity, aspirational interest, and financial implications in partnership development and program locations

4 Develop a program portfolio with diverse opportunities including short-term programs

5 Within short-term program options, include academic credit-bearing, co-curricular, research-based, and hybrid (i.e. research-based with academic credit) models

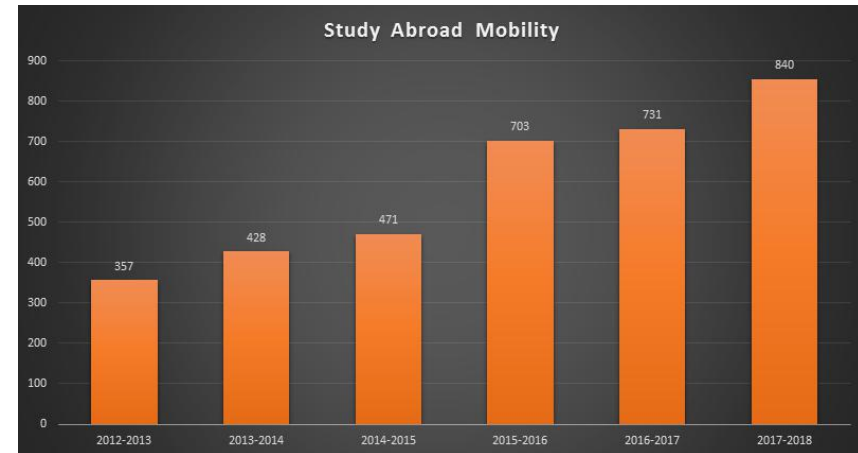
6 Coordinate planning and advocacy such that students have at least a two-year view of program options and opportunity to facilitate academic, financial, and personal planning

7 Support faculty engagement in study abroad program development and leadership

8 Commit to, provide seed funding for, and support program development and initial student participation

9 Communicate opportunity and expectation that students will have a study abroad experience of some type while enrolled

10 Thoughtfully consider the intersection of multiple factors influencing access to and advocacy for participation of diverse students in study abroad including lead time in program development; program type, length, location, and price; and engagement of key individuals in efforts to promote participation



Case Studies

Scalability and Sustainability

- SIRI
 - Additional disciplines
 - Broaden recruitment context
 - **Modify calendar, pilot semester-based program**
 - Pilot grad USA
- ISAR
 - **Additional disciplines**
 - **Additional location(s)**
- Other Lessons Learned
 - **Creative reciprocity**
 - **Alternate mobility models**
 - **UNESP**
 - **USP – ICMC**
 - **CETYS**

Mobility Initiatives and Outcomes

- Institutional Commitment
- Strategic Outreach
 - Professional conferences
 - Delegations/site visits
 - Relationships
 - Intersecting goals
- Capacity Building
 - Faculty engagement, faculty-led programs
 - Partner programs
 - 100K Strong in the Americas grants
 - Creative reciprocity
 - Diverse program models
- Assessment and Sustainability
 - Program and participant outcomes
 - Model modification and program location
 - Internationalization at home (new strategic plan)

Q & A