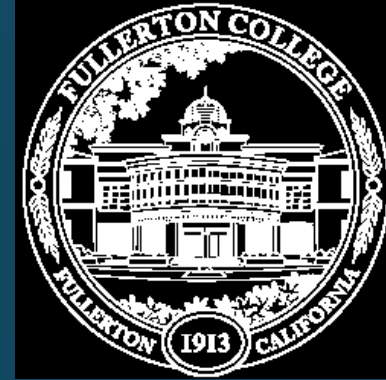




CALIFORNIA STATE UNIVERSITY
FULLERTON



Project RAISE: A Regional Alliance in STEM Education

Raising the Bar in Transfer, Retention, and Graduation Rates

Department of Education HSI-STEM Title III Part F Grant, Award P031C160152

33rd Annual HACU Conference Chicago, IL

Presenters

- Megan Drangstveit, Project Director, Project RAISE, California State University, Fullerton
- Mark Greenhalgh, Dean of Mathematics and Computer Science, Fullerton College
- Dr. Richard Hartmann, Dean of Natural Sciences, Fullerton College

Fullerton College at a Glance

Fall 2018

- 23,239 Headcount
- 52% Female; 47% Male
- 33% 19 and under
- 62% 20-39, 5% over 40
- 41% first generation
- Over 50% on fee waiver

Overview and Partnership

- The STEM Success Learning Community (STEM SLC) is a “first-year experience and beyond” program that assists new Fullerton College students as they pursue STEM majors/career pathways. The goal of the STEM SLC is to connect new students to resources on campus and in our local communities so that they accomplish their academic, personal, and career goals efficiently within a supportive environment. We are open access, meet students where they start, and work to cultivate future leaders within the STEM community.

Overview and Partnership

- Project RAISE and the STEM SLC have worked together to increase transfer rates and exposure to opportunities available at CSUF within the Natural Sciences and Mathematics and Engineering and Computer Science Departments
- This partnership includes:
 - Guest Speakers- CSUF faculty and community college transfer students
 - Transfer Tours
 - Opportunities to participate in URE
 - Two and three year transfers to CSUF among STEM SLC students

Recruitment into STEM fields

- Initial contacts as early as Jr High, continue thru junior and senior years of H.S.
- Counselors at local K-12 schools
- STEM component of Intro to College class offered to HS Seniors
- Dual Enrollment

STEM Student Cohort

- Orientation
- Intensive boot-camps in math, biology, chemistry
- Faculty and Student Mixers
- Tutoring
- Ongoing Professional Development for faculty
- Supplemental Instruction
- Peer Assisted Learning (PAL)
- Peer Undergrad Mentor Program
- Faculty Mentoring
- Research Opportunities

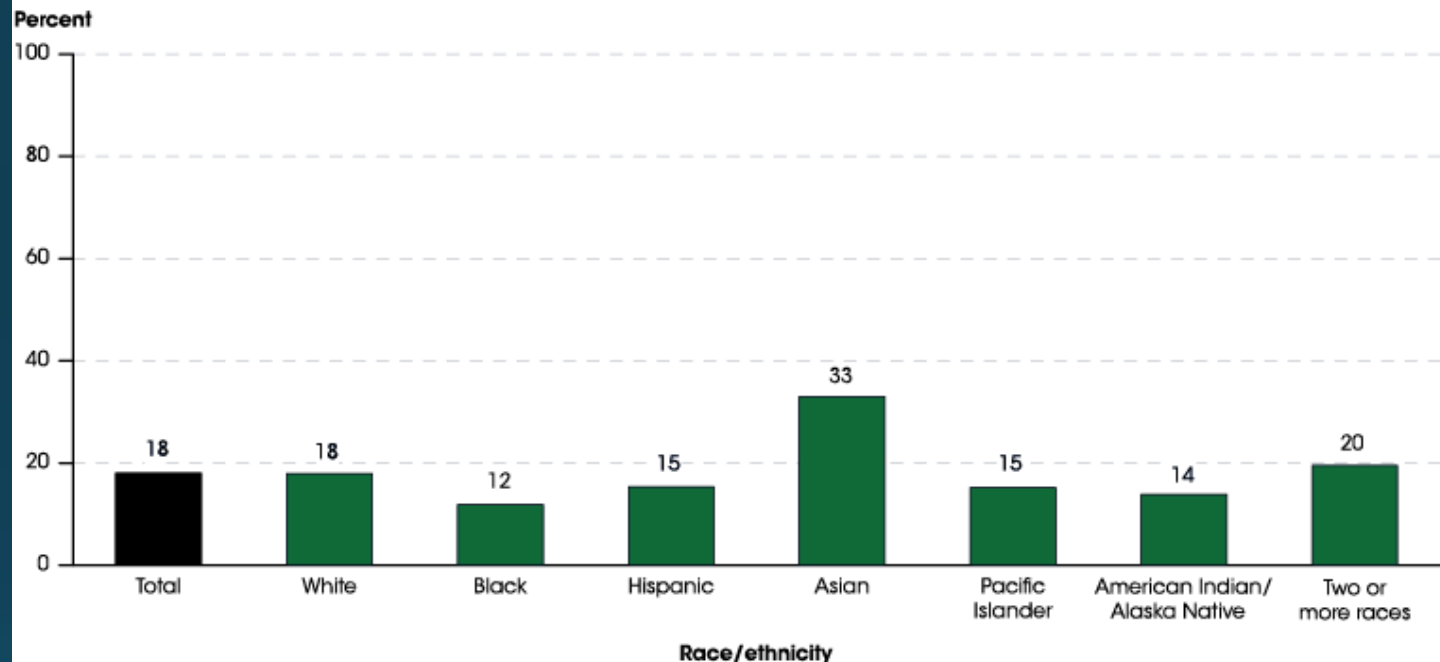
Demographics of the SLCs

Cohort Participants				
Cohort 5	SLC I	SLC II	slcIII	
26	59	73	87	
Demographics				
	Coho..	SLC I	SLC II	slcIII
% Female	52%	41%	49%	42%
Asian / Asian Amer.	12%	15%	19%	10%
Black / African Am..	4%		1%	1%
Filipino	4%	3%	5%	5%
Latinx	50%	53%	53%	60%
NHPI				2%
Two or More	8%	5%	3%	3%
Unknown		5%	7%	7%
White	23%	19%	11%	11%

- Cohort 5: 2016-2017
- SLC I: 2017-2018
- SLC II: 2018-2019
- SLC II: 2019-2020

National Statistics

Figure 26.1. STEM bachelor's degrees as a percentage of total bachelor's degrees conferred by postsecondary institutions, by race/ethnicity: Academic year 2015–16



NOTE: Data are for postsecondary institutions participating in Title IV federal financial aid programs. STEM fields include biological and biomedical sciences, computer and information sciences, engineering and engineering technologies, mathematics and statistics, and physical sciences and science technologies. Reported racial/ethnic distributions of students by level of degree, field of degree, and sex were used to estimate race/ethnicity for students whose race/ethnicity was not reported. Race categories exclude persons of Hispanic ethnicity. Although rounded numbers are displayed, the figures are based on unrounded data.

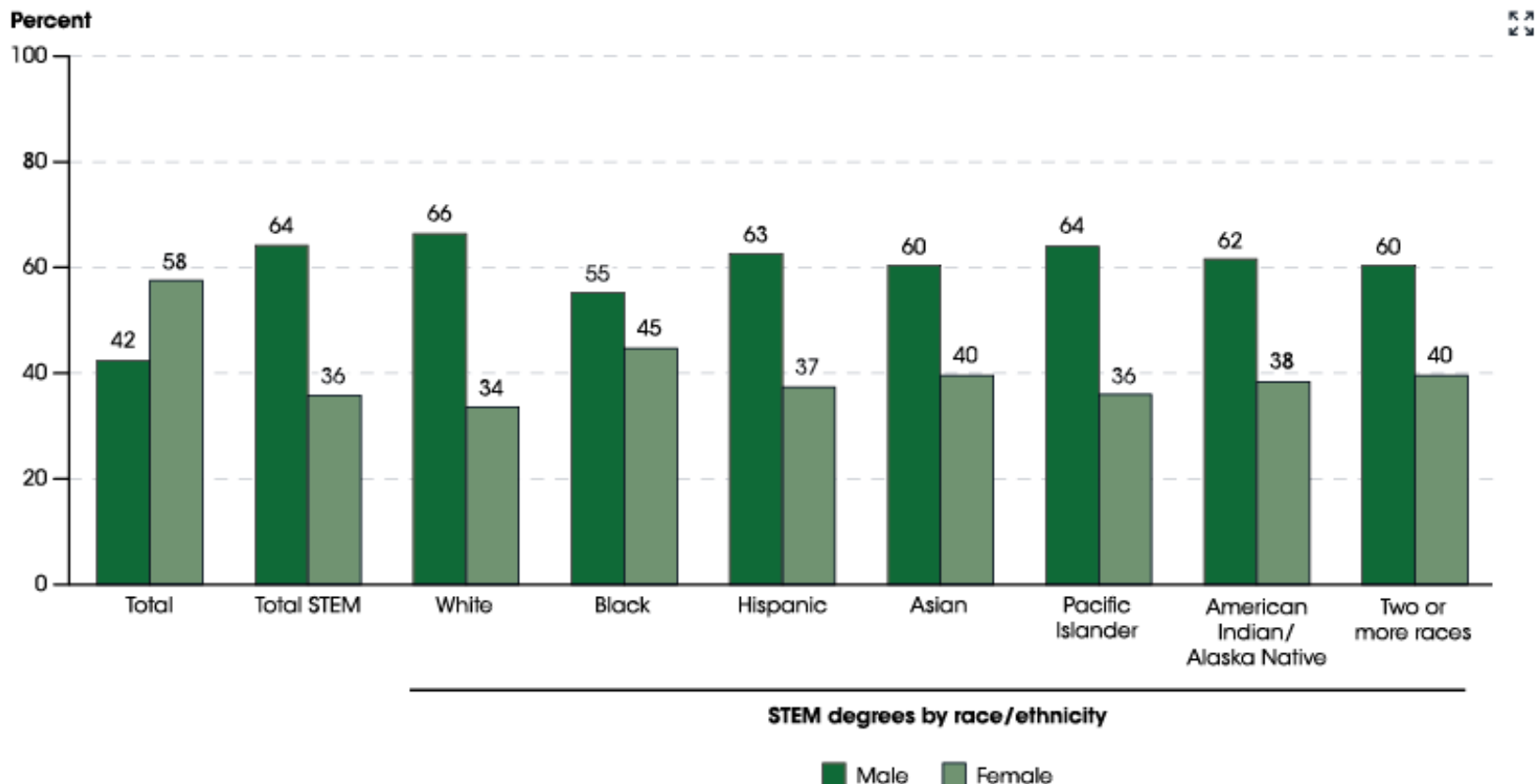
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2016, Completions component. See *Digest of Education Statistics 2017*, [tables 318.45](#) and [322.30](#).

National Statistics

Overall, a higher percentage of bachelor's degrees were awarded to females than to males in 2015–16 (58 vs. 42 percent). However, in STEM fields, a lower percentage of bachelor's degrees were awarded to females than to males (36 vs. 64 percent). This pattern—in which females received higher percentages of bachelor's degrees overall but lower percentages of bachelor's degrees in STEM fields—was observed across all racial/ethnic groups.

National Statistics

Figure 26.2. Percentage of total and STEM bachelor's degrees conferred by postsecondary institutions, by race/ethnicity and sex: Academic year 2015–16



Academic Support at FC

- Partnership with Project RAISE has allowed us to increase our outreach to students each year and provide more support inside and outside of the classroom.
- Supplemental Instruction, Winter and Summer Boot Camps focusing on disciplines in the Natural Sciences, and growing number of students in our learning community have proven to help increase success rates in inter-disciplinary transfer curriculum.

Academic Support at FC

- Mathematics-

STEM SLC students that pass Calculus I (Math 151) are successfully completing Calculus II (Math 152) at a rate that is 20 percentage points higher than non-STEM SLC students.

- Chemistry-

Students in our program that pass our gateway Chemistry course (CHEM 107) are successful in the next course in the sequence (CHEM 111A) at a rate that is 10 percentage points higher than Non-STEM SLC counterparts. These students are also succeeding at a rate that is 18 percentage points higher than non-STEM SLC students in completing the Gen CHEM sequence (111A/111B).

- Biology-

STEM SLC students are successfully completing our gateway Biology majors' course (BIOL 170) at a rate that is 26 percentage points higher than their non-STEM SLC counterparts.

Undergraduate Research

Fullerton College has had multiple students apply to Project RAISE's Undergraduate Research Experience programs over the past three years.

Students who participate in the summer URE presented their research to fellow students at a Research Symposium

Transfer Information

- Over the past three years the STEM SLC has had students successfully complete our program and transfer on to the university level with many more preparing for Spring 2020 and Fall 2020
- Highlights include students transferring to universities and majors:
 - CSUF- Biological Sciences
 - CSUF- Mechanical Engineering
 - CSUF- Computer Science and Computer Engineering
 - CSUF- Earth Science
 - UC Berkeley- Mechanical Engineering
 - UC Berkeley- Astrophysics
 - UCLA- Chemical Engineering
 - UCLA- Biology
 - UCR- Computer Science
 - Cal Poly Pomona- Civil Engineering
 - CSULB- Biology

Other Data

Percent of Fullerton College Courses with CSUF Articulation Agreements

Bio	Bio-Chem	Chem BS	Chem BA	Comp Sci	Comp Eng	Elec Eng	Mech Eng	Civil Eng	Earth Sci	Geol	Math	Physics
82%	93%	94%	92%	86%	75%	63%	100%	81%	100%	100%	93%	100%

Looking Forward

- STEM SLC Students are transfer directed.
- They are completing their college level Math and English courses earlier than non-STEM SLC students. This directly relates to the data showing our 3 year transfer rate being almost 15 percentage points higher in comparison to all students who start their post-secondary academic careers at Fullerton College.
- Our goal is to institutionalize the academic support made possible through our partnership with Project RAISE and to continue to increase exposure to and transfer rates to CSUF within the Natural Science and Mathematics and Engineering and Computer Science Departments.

CSUF at a Glance

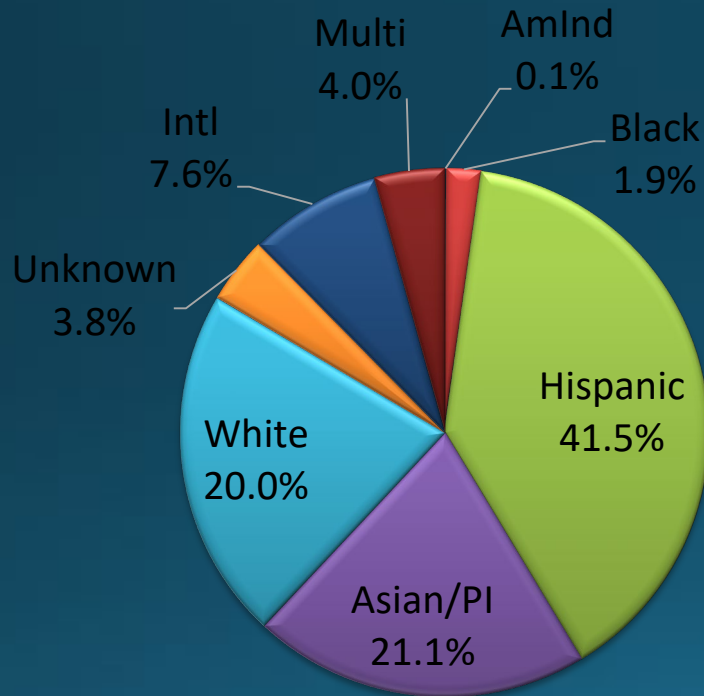
Fall 2018

- 39,774 students enrolled, largest in CSU
- 34,800 undergraduate students
- 4,408 first time freshmen
- 3,613 new transfers
- 33% of undergrads are 1st generation college students
- ~45% of undergrads are Pell recipients

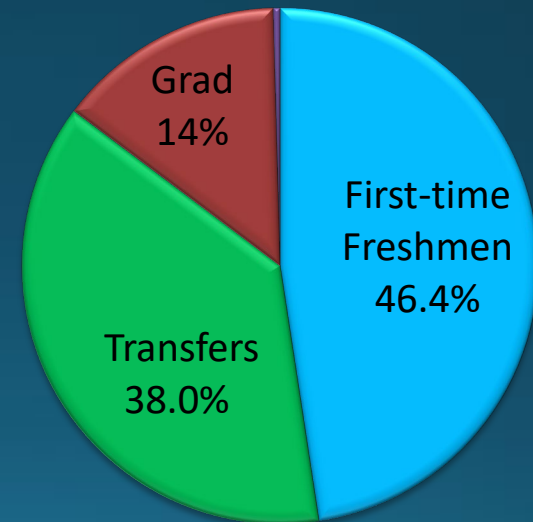
CSUF at a Glance

Fall 2018

Ethnic Composition



Entering Characteristics Composition



CSUF at a Glance

Fall 2018

Average High
School GPA of
First-Time
Freshmen

3.68

Average SAT of
First-Time
Freshmen

1127

Average
Transfer GPA

3.32

Average Age of
Undergraduates

24 (transfer),
18 (FTF)

Degrees Earned – 2018

Bachelor's Degrees Earned	Master's Degrees Earned	EdD Degrees Earned	Total Degrees Earned
9,038	1,879	57	10,974

40% first-time freshmen, 59% UG transfer, and < 1% 2nd BA.
57% were first generation to earn a Bachelor's degree

CSU Fullerton Rank	*CSU CO 2017-2018; **IPEDS 2016-2017 extracted Aug 2019		
	In CSU*	In CA**	In USA**
Bachelor's Degrees Earned	1	4	13
Bachelor's Degrees Earned by Underrepresented Minority Students	1	4	4
Bachelor's Degrees Earned by Hispanic Students	1	4	5

2018-2019 TRANSFERS MATRICULATED

TOP 20 COMMUNITY COLLEGES

Institution of Origin	# of Transfers	Institution of Origin	# of Transfers
Fullerton College	1,110	Citrus College	122
Orange Coast College	603	Rio Hondo College	116
Saddleback College	533	Pasadena City College	106
Santa Ana College	483	Chaffey College	103
Irvine Valley College	461	Riverside Community College	89
Santiago Canyon College	422	Long Beach City College	83
Cypress College	420	El Camino College	80
Golden West College	306	Coastline Community College	58
Mount San Antonio College	231	Mount San Jacinto College	43
Cerritos College	142	East Los Angeles College	42

Some CSUF-Community College STEM Partnership Programs

2008-2013-\$2.5 million- NSF STEP 1A Award # 0757113

TEST-UP: Talent Expansion in Science and Technology – An Urban Partnership

Partners: Santa Ana College and Mt. San Antonio College

2009-2011-\$640k-CSUF-Santiago Canyon College-Subcontract to CCT

Guiding and preparing STEM students and secondary school math/science teachers

2011-2016-\$6.0 million-Department of Education Award # P031C110116

(STEM)² Strengthening Transfer Education and Matriculation in STEM

Partners: Citrus College, Cypress College, Santiago Canyon College

2016-2021-\$5.8 million-Department of Education Award # P031C160152

Project RAISE (Regional Alliance In STEM Education)

Partners: Citrus College, Cypress College, **Fullerton College**, Golden West College, Mount San Antonio College, Orange Coast College, Santa Ana College, Santiago Canyon College

Lessons Learned From Prior Grants

- Transfer partnerships between institutions, beyond articulation agreements
- Active collaboration of CC counselors and staff and university staff and faculty
- Undergraduate research programs
- Transition programs
- Peer mentoring

Project RAISE

Project RAISE integrates a variety of services and project components to increase the number of Hispanic and low-income STEM students and increase persistence, retention, and graduation rates among participants.

Components:

- Project RAISE partners
- Peer Advisors
- Community college outreach & information sessions
- Undergraduate Research Experience
- RAISE Transfer Program
- Summer Internship Program
- Transferology
- STEM Articulation Conference

CSUF STEM Majors (for Project RAISE)

Natural Sciences and Mathematics

- Biochemistry, B.S.
- Biological Science, B.S.
- Chemistry, B.A.
- Chemistry, B.S.
- Earth Science, B.A.
- Geology, B.S.
- Mathematics, B.A.
- Physics, B.S.

Engineering and Computer Science

- Civil Engineering, B.S.
- Computer Engineering, B.S.
- Computer Science, B.S.
- Electrical Engineering, B.S.
- Mechanical Engineering, B.S.

Project RAISE Partners

Community Colleges

Citrus College

Cypress College

Fullerton College

Golden West College

Mt. San Antonio College

Orange Coast College

Santa Ana College

Santiago Canyon College

CSUF Colleges

Natural Sciences and Mathematics

Engineering and Computer Science

CSUF & External Partners

CSUF Career Specialists

CSUF Retention Specialists

CSUF Graduation Specialists

CSUF Information Technology

Orange County Business Council

Arroyo Research Services

Outreach

Project RAISE engages community college students at partner colleges through information sessions, transfer fairs, and classroom visits, and also hosts community college groups at CSUF for presentations and lab tours

INFORMATION SESSIONS

- **Careers in STEM**

- How to Interview Successfully
- How to Secure Internships and Careers in STEM
- Tips for Job Hunters
- Network and Dress for Success

- **Undergraduate Research Experience**

- Undergraduate Researchers Panel
- Peer Advisor Application Support

- **RAISE Transfer Program**

- Transfer 101 / Understanding the Transfer Process / Everything You Need to Know About Transferring
- Transfer Shock / Tips for 1st Year Success
- Strategies for Success & Time Management
- Habits of Successful Students
- Transfer Panel
- Transfer and Research
- **Transferology**



URE

UNDERGRADUATE
RESEARCH
EXPERIENCE

- 8 week experiential learning opportunity
- Community college students are matched with a primary investigator and are assigned a project for the summer at CSUF
- Students create a poster and present at the summer research symposium in August, and at their community college the following semester / year
- Eligible students receive a \$5,000 stipend
- Participants: 2017: 32, 2018: 41, 2019: 48

URE Eligibility Requirements

- Enrolled at a Project RAISE partner college through spring 2020
- Passed 2 courses in science, technology, or engineering
- Ready for or has already completed Calculus I*
- Working on first undergraduate degree
- Willing to forgo summer work and school & commit 40+ hours per week to URE
- Willing to share their poster at their community college in the 2020-2021 academic year
- U.S. citizen or permanent resident in order to receive stipend

* Math requirement varies by CC

URE at a Glance

URE begins with an orientation, lab safety training, and the kickoff event. During the eight weeks, students must:

- Commit to 40+ hours of research per week
- Meet with their peer advisor weekly
- Attend Project RAISE programming
 - Workshops designed to support the experience are mandatory
 - Social events (game night, movie night, etc.) are voluntary
- Complete assignments and milestones to receive biweekly stipend checks

URE Student Participation

College	URE17	URE18	URE19	Total
Citrus College	4	6	7	17
Cypress College	4	5	4	13
Fullerton College	5	5	6	16
Golden West College	2	5	5	12
Mt. San Antonio College	4	6	6	16
Orange Coast College	3	5	4	12
Santa Ana College	5	4	7	16
Santiago Canyon College	5	5	9	19
Total	32	41 (1 v)	48 (1 v)	121

URE19 Participant Demographics

	Hispanic / Latinx	Not Hispanic / Latinx	Total
Low Income	29 (60.42%)	11 (22.92%)	41 (83.33%)
Not Low Income	6 (12.5%)	2 (4.12%)	8 (16.66%)
Totals	35 (72.92%)	13 (27.08%)	48 (100%)

Hispanic AND Low Income: 29 (60.42%)

Hispanic OR Low Income: 47 (95.83%)

Fullerton College Student Feedback

Successfully completing this URE is already a huge accomplishment, but is there anything additional you've done this summer as a result of your participation (e.g., publications, presentations, proposals submitted to research conferences, subsequent work/research) that you'd like to tell us about?

- I will like to apply to present at other conferences but so far have not submitted applications, as they are in the process.
- As of right now no, but I was asked by my community college professors to come back and present to their classes.
- I am very happy to tell you that I am continuing in my research lab in the fall when I transfer to CSUF.
- I submitted my Abstract proposal to SACNAS.
- I was able to talk to my PI and will continue to volunteer with him throughout the fall semester

Fullerton College Student Feedback

Now that you've been through this URE, is there anything specific you'd like to share about the helpfulness of your Peer Advisor or peer advising?

- My peer advisor was great because I am a pretty sensitive person I tend to overthink a lot and I can be pretty emotional. In the times that I was having a moment that was a little harder than others, my peer advisor would help calm me down and give me encouragement.
- They seemed very dedicated to helping me with any problem I had to ensure my lab experience was not made more challenging for any reason. When I had family issues arise, they helped me talk through them since my family is in Mexico and I lived alone during this experience, so I needed someone to talk to when a family member past away and I was unable to attend the funeral. So I am very thankful for the supportive staff.
- The peer advisers are on top of their job, always there to support us when we're having tough moments. Having a mentor who has been in our shoes, really helps to have that connection with one another.
- Jacob was always readily available for whatever problems we were facing. PA meetings were especially helpful because it was nice to talk to someone outside my lab group about how we were doing on the actual research.

Fullerton College Student Feedback

*Thinking back on the past 8 weeks of this URE, what has been your biggest takeaway?
What do you want to be sure we know about your experience?*

- It was beyond my expectations in terms of what I learned and what programs there are available when wanting to apply to grad school. The workshop having to do with grad school and the professors speaking of their experience of their journey to get their PhD was extremely helpful because I realized many people who haven't been through that experience have had similar experiences as I have when dealing with family when they ask "So when are you graduating?" Like okay, hey, I will get there when I get there. And that the journey is an equally satisfying experience as the end. I never connected with someone so much when we had that panel of professors, I told my PA I was actually on the verge of tears to see how others have struggled as much as I have when wanting to continue through school but being financially unable and what to do about it. I very much appreciate those workshops as they did give me more of a peace of mind. Thank you.

RAISE Transfer Program (RTP)

RAISE Transfer Program (RTP) is a transition program for STEM students transferring to CSUF from the eight Project RAISE community colleges

RTP benefits:

- Ease the transition to the CSUF for STEM majors
- Gain skills for academic success
- Connect with academic, graduation, and career specialists
- Resources for academic success
- Support from Peer Advisors and Academic Success Coordinator
- Connect students to paid summer internships through Summer Internship Program
- **Priority registration**

All new NSM and ECS transfer students are automatically signed up, but students must participate to receive priority registration.

RAISE Transfer Program

- RTP overview
- Peer Advisors
- Summer Internship Program
- NSM and ECS Success Teams – Graduation and Career Specialist
- Counseling and Psychological Services
- Financial Aid
- Connect with other STEM transfer students

RAISE Transfer Program

PARTICIPATION REQUIREMENTS

- **CSUF Transfer Orientation and RTP Kickoff**
- **Peer Advising** – meet 2 times in the first semester, 1 time each semester after
- **Academic Success Coordinator** – meet at least 1 time each semester (includes SIP meetings)
- **Co-curricular Activities** – 4 per semester including 1 RTP workshop or event, faculty office hours, tutoring, SI, other campus events or workshops
- **Graduation or Career Specialist** – at least 1 time per year
- **Join an NSM or ECS club**

RAISE Transfer Program

WORKSHOPS AND EVENTS

- RAISEwalks – Pollak Library, Fullerton Arboretum, Student Recreation Center, and Titan Student Union
- Workshops:
 - Stress Management
 - Scholarships
 - STEM Networking with student clubs
 - Time Management
 - STEM Internship and Career Prep

Transfer Resource Center (TRC)

- Study area
- Charging stations
- White boards
- Break area with a microwave
- Access to Peer Advisors
- Stress free station
- RTP workshops
- Campus Resources Board

Summer Internship Program

The Summer Internship Program (SIP) helps students apply learning from their classroom and laboratory to the workplace, build a professional network, and gain skills needed to find jobs in STEM after graduation.

- Offered to RAISE Transfer Program (RTP) students
- Paid summer internships in STEM fields
- Provides guidance and support through the application and interview process
- Professional preparation workshops each semester
- Collaboration with NSM and ECS Career Specialists
- Up to 30 participants in years 2-5

Summer Internship Program

Internship Sites - Summer 2019

- Raytheon
- Brainstorms
- Cod.ED
- Advanex Americas Inc.
- ACCO HVAC
- Price Spider
- SCS Energy
- Macar Properties
- City of Huntington Beach
- Censor X- Water Co.
- HBT Labs
- Mesa Associates

Summer Internship Program

SIP BOOTCAMP

- Collaboration with Career Center and NSM & ECS Student Success Teams
- Employer support
 - Griffith Company
 - Edwards Lifesciences
- Tuffy's Closet – FREE professional clothes available for students
- LinkedIn Photo Booth

Summer Internship Program

Employer Site Tours

- Edwards Lifesciences
- HBT Labs
- OC Sanitation District
- OC Crime Lab

Questions?

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<https://stem.fullcoll.edu/>

<http://www.fullerton.edu/projectraise/>