

# STEM Transfer Pathway to Cal Poly Pomona

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**Jeyoung Woo**, Ph.D., PE, PMP | Associate Professor, Dept. of Civil Engineering

**Cal Poly Pomona**

September 20, 2024

# Agenda

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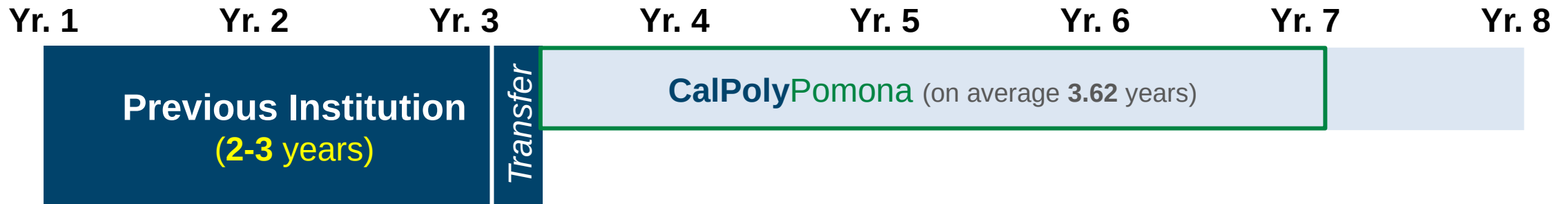
- **Background**
- **Let's think about the transfer students...**
  - CE Dept. Curriculum (CEM program)
  - Articulation agreement between CPP (CE) and Top 10 Feeder Schools
  - Focused on GPA, not subjects (Average GPA) & Average YTD at CPP
- **STEM Transfer Pathway**
  - NSF BRIDGE Project
  - Department of Education (ED) STARS Project

# Background

- The State of California, which has the largest four-year public university system in the United States, **does not** have an Associate Degree for Transfer (ADT) in Engineering... (NSF BRIDGE Proposal, 2022)

# Background

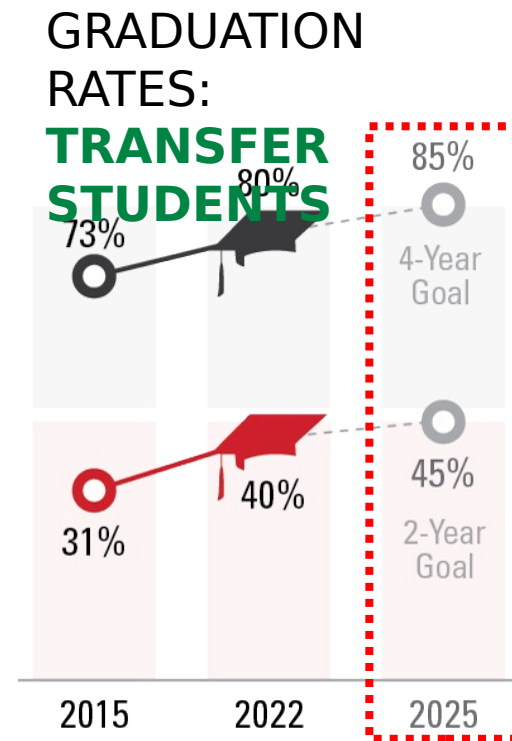
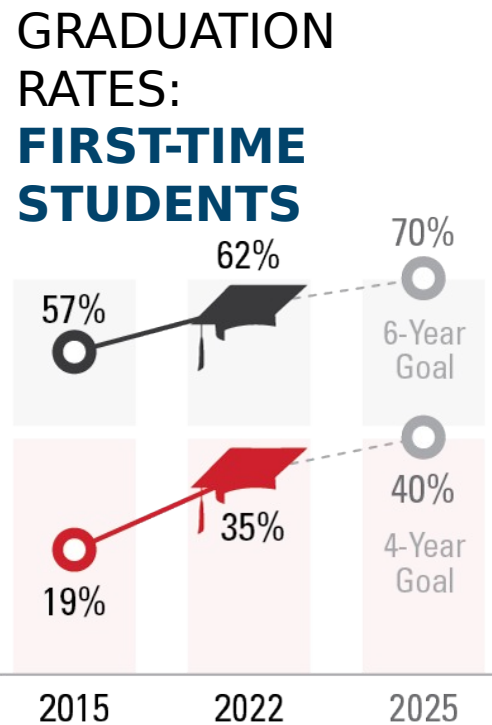
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# Background – CSU GI 2025

- **Graduation Initiative (GI) 2025**

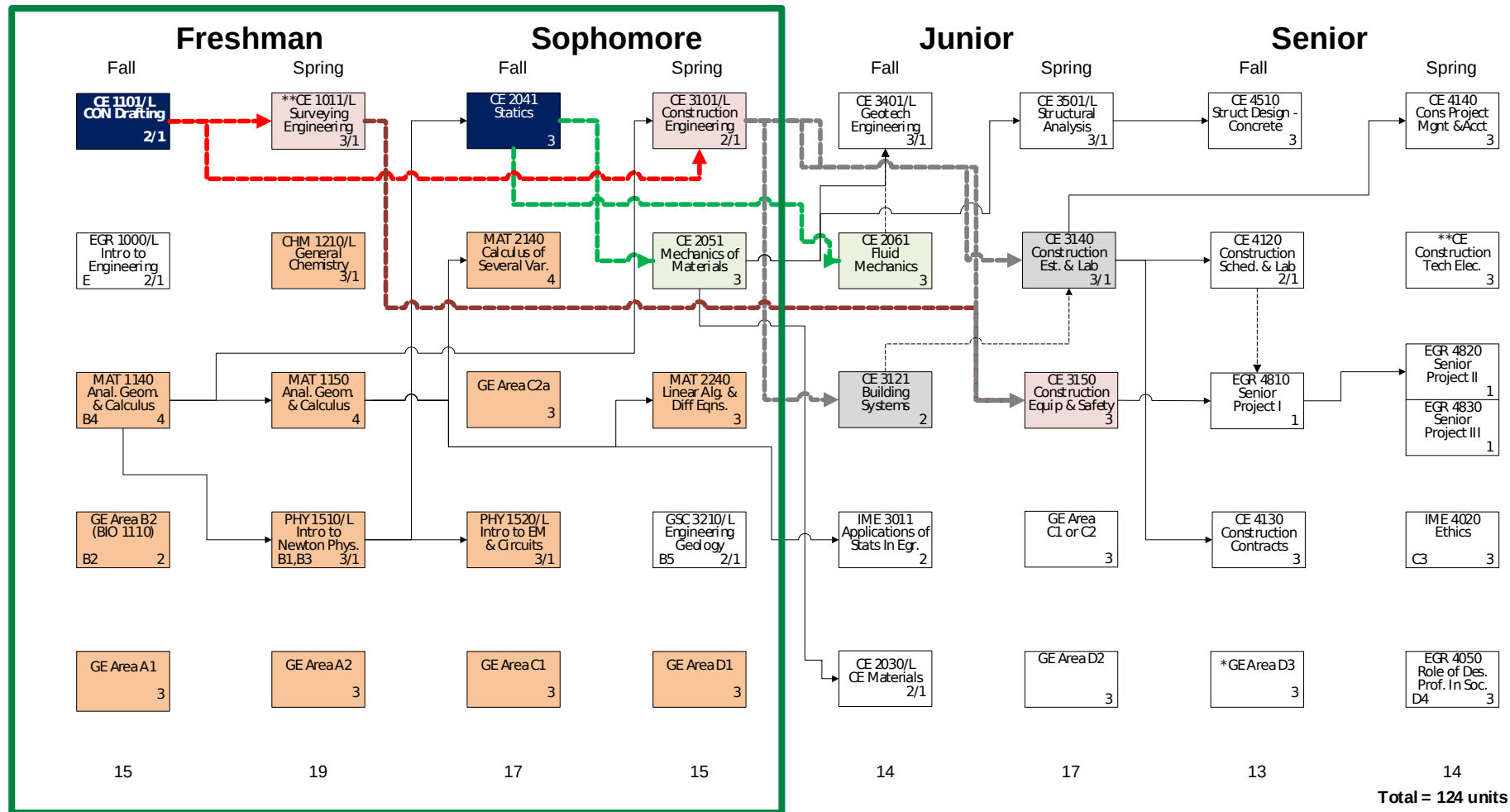
- To increase graduation rates for all CSU students while eliminating opportunity and achievement gaps.



<Source: <https://www.calstate.edu/csu-system/why-the-csu-matters/graduation-initiative-2025>>

# Let's think about the transfer students...

## 1. CE Dept. Curriculum (CEM program) at Cal Poly Pomona



\*\* See curriculum sheet for list of eligible courses. Pre-requisites vary - check catalog for specifics.

# Let's think about the transfer students... (cont'd)

1. CE Dept. Curriculum (CEM program)

## 2. Articulation agreement between CPP (CE) and Top 10 Feeder Schools

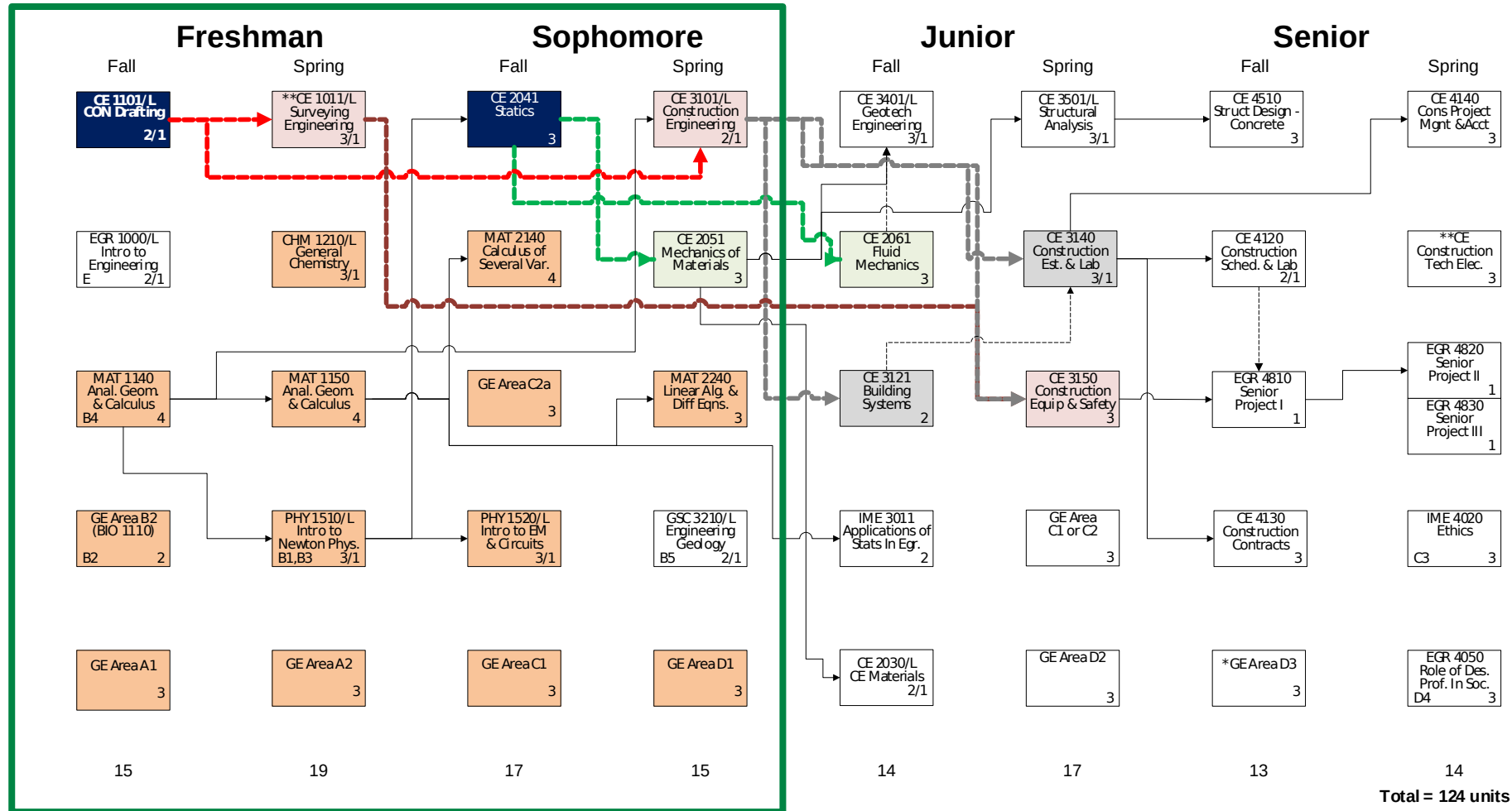
No.	Required Major Course at CPP	Top 10 Feeder Schools									
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
1	[CE 1001/L] Civil Eng.	X	X	X	X	X	-	X	X	X	X
2	[CE 1101/L] Construction Drafting	X	X	X	X	X	-	X	X	X	X
3	[CE 1011/L] Surveying Eng.	-	X	-	-	-	-	-	-	-	X
4	[CE 2011] Tech. Communications	-	X	-	-	-	-	-	-	-	-
5	[CE 2021] Eng. Economics	-	-	-	-	-	-	-	-	-	-
6	[CE 2030/L] Civil Eng. Materials	-	X	-	-	-	-	-	-	X	-
7	[CE 2041] Eng. Statics	-	X	X	X	X	X	X	X	X	X
8	[CE 2051] Mechanics of Materials	-	X	-	-	-	-	X	-	X	X
9	[CE 2061] Fluid Mechanics	-	-	-	-	-	-	-	-	-	-
10	[CE 2070] Computer Programming	-	X	-	-	-	-	-	-	-	-
<b>Current Alignment Percentage</b>		<b>20%</b>	<b>80%</b>	<b>30%</b>	<b>30%</b>	<b>30%</b>	<b>10%</b>	<b>40%</b>	<b>30%</b>	<b>50%</b>	<b>50%</b>

Note.) **A:** Victor Valley College, **B:** Mt. SAC, **C:** Citrus Community College, **D:** Glendale Community College, **E:** Chaffey Community College, **F:** Riverside Community College, **G:** Pasadena City College, **H:** Saddleback College, **I:** Cerritos Community College, **J:** East Los Angeles College

<Source: <https://assist.org/>>

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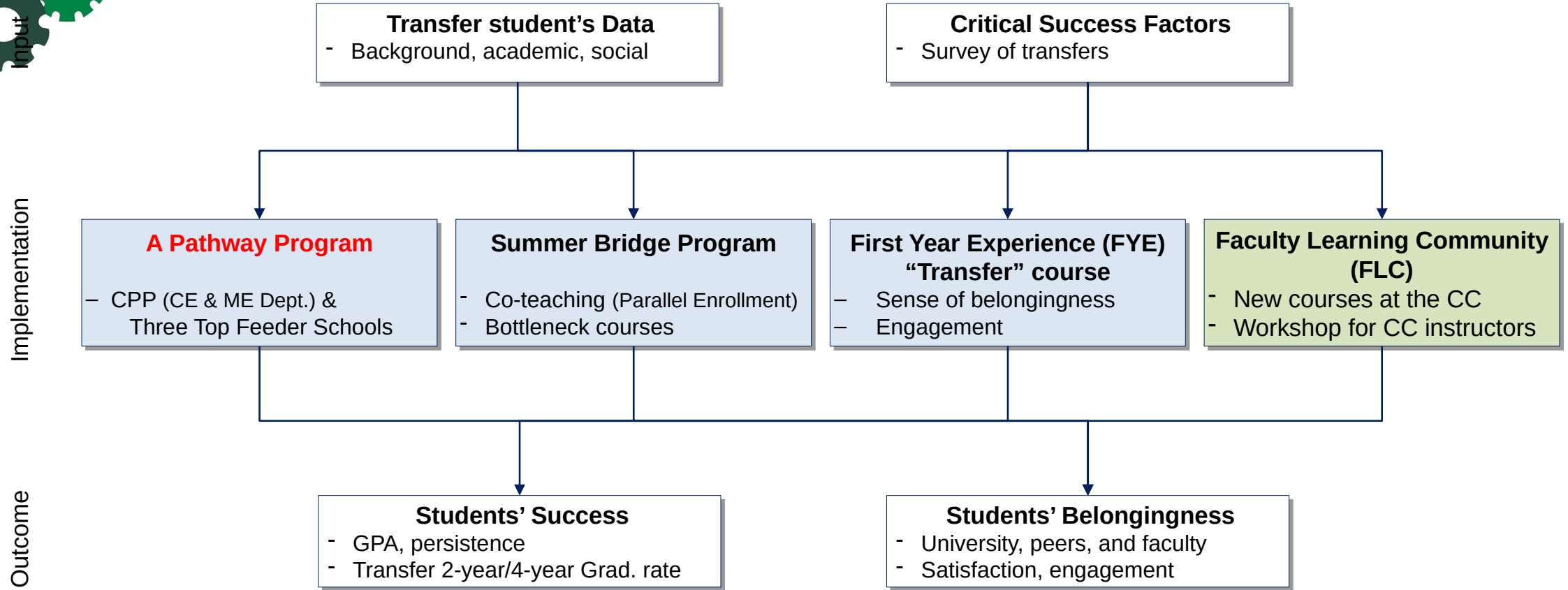
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1. CE Dept. Curriculum (CEM program)
2. Articulation agreement between CPP (CE) and Top 10 Feeder Schools
- 3. Focused on GPA, not subjects (Average GPA) & Years to Degree (YTD)**

# [NSF BRIDGE] Overview



## Planned Activities (January 2023 – December 2026)



**Disclaimer:** Opinions or points of view expressed in this presentation represent the view of the presenter, and does not necessarily represent the official position or policies of the Funding Agencies (NSF, Department of Education)

# Transfer Pathway Program (Fall 2024)

- Transfer Pathway MOU with **Admission Bonus Points**
- **E.g.) The Certificate at Mt. SAC**

Type	Required Courses (Mt. SAC)	Articulated Courses (CPP)
<b>Engineering Fundamentals</b>	<ul style="list-style-type: none"> <li>• ENGR 1 Introduction to Engineering</li> <li>• ENGR 1C Engineering Critical Thinking</li> <li>• ENGL 1A Freshman Composition (or ENGL 1AH/1AM, AMLA 1A)</li> <li>• MATH 150 Trigonometry (or MATH 160, MATH 180)</li> <li>• PHYS 2AG General Physics</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> <li>• CE 2011 Technical Communication</li> <li>• None</li> <li>• None</li> <li>• None</li> </ul>
<b>Level 1</b>	Completion of <b>Engineering Fundamentals</b> coursework <ul style="list-style-type: none"> <li>• CHEM 50 General Chemistry I (or CHEM 50H, CHEM 55)</li> <li>• SPCH 1A Public Speaking (or SPCH 1A)</li> <li>• SURV 1A Surveying</li> <li>• SURV 1B Surveying (or ENGR 18)</li> </ul>	<ul style="list-style-type: none"> <li>• CHM 1210 General Chemistry</li> <li>• None</li> <li>• CE 1011 Surveying Engineering</li> <li>• CE 1011 Surveying Engineering</li> </ul>
<b>Level 2</b>	Completion of <b>Engineering Fundamentals, Emphasis in Civil Engineering Level 1</b> coursework <ul style="list-style-type: none"> <li>• ENGR 6 Intro. to ENG Programming Concepts and Methodologies (or ENGR 7)</li> <li>• ENGR 8 Properties of Materials</li> <li>• ENGR 24 Engineering Graphics</li> <li>• MATH 181 Calculus and Analytic Geometry</li> </ul>	<ul style="list-style-type: none"> <li>• CE 2070 Computer Programming and Numerical Methods</li> <li>• CE 2030 Civil Engineering Materials</li> <li>• CE 1001 Civil Engineering</li> <li>• MAT 1150 Calculus II</li> </ul>
<b>Associate (AS) Degree</b>	Completion of <b>Engineering Fundamentals, Emphasis in Civil Engineering Level 1 &amp; 2</b> coursework (Choose a minimum of 10 units) <ul style="list-style-type: none"> <li>• ENGR 18 Introduction to Engineering Graphics</li> <li>• ENGR 40 Statics</li> <li>• ENGR 40T Applied Statics</li> <li>• ENGR 41 Dynamics</li> <li>• ENGR 42 Mechanics of Materials</li> <li>• ENGR 50A Robotics Team Project Dev.</li> <li>• ENGR 50B Intermediate Robotics Team Project Development</li> <li>• ENGR 285 Differential Equations and Linear Algebra for Engineers</li> <li>• PHYS 2BG General Physics</li> <li>• PHYS 4B Engineering Physics</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> <li>• CE 2041 Engineering Statics</li> <li>• None</li> <li>• None</li> <li>• CE 2051 Mechanics of Materials</li> <li>• None</li> <li>• None</li> <li>• MAT 2240 Elementary Linear Algebra and Differential Equations</li> <li>• None</li> <li>• PHY 1520 Introduction to Electromagnetism and Circuits</li> </ul>

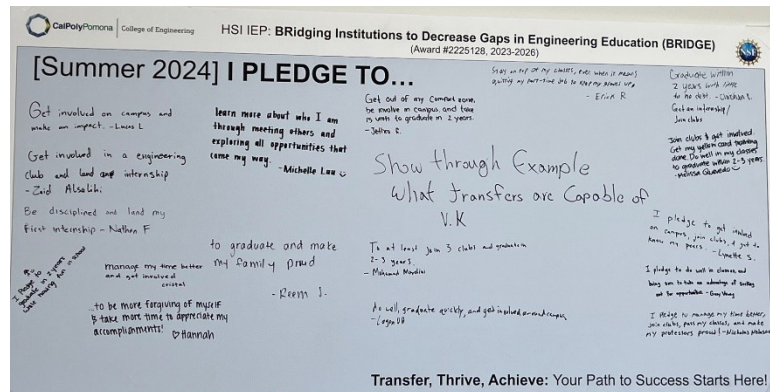
# [NSF BRIDGE] Overview



- FREE Engineering BRIDGE Program**

– Incoming transfer students to the **Civil/Mechanical/Other** Engineering

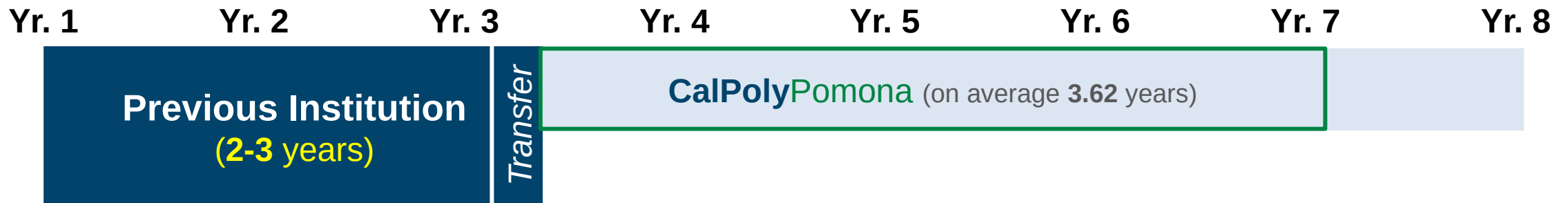
	Wed (8/07)	Thu (8/08)	Fri (8/09)	Mon (8/12)	Tue (8/13)	Wed (8/14)	Thu (8/15)
<b>Morning</b> (9:00 am – 11: 30 am)	<ul style="list-style-type: none"> <li>Welcome</li> <li>Cohort activity</li> </ul>	<ul style="list-style-type: none"> <li>Project Management</li> </ul>	<ul style="list-style-type: none"> <li>Transfer Students Panel</li> </ul>	<ul style="list-style-type: none"> <li>Field Trip (Construction)</li> </ul>	<ul style="list-style-type: none"> <li>Student Club Panel</li> </ul>	<ul style="list-style-type: none"> <li>Review of Statics</li> </ul>	<ul style="list-style-type: none"> <li>Review of Surveying</li> </ul>
<b>Afternoon</b> (1:00 pm – 4:00 pm)	<ul style="list-style-type: none"> <li>Industry PPT (Career Development)</li> </ul>	<ul style="list-style-type: none"> <li>Department Lab Tour (CE, ME)</li> </ul>	<ul style="list-style-type: none"> <li>Career Workshop (Resume, Interview)</li> </ul>	<ul style="list-style-type: none"> <li>Cohort Activity (Research)</li> </ul>	<ul style="list-style-type: none"> <li>Review of Surveying</li> </ul>	<ul style="list-style-type: none"> <li>Review of Statics</li> </ul>	<ul style="list-style-type: none"> <li>Field Trip (Manufacturing)</li> </ul>



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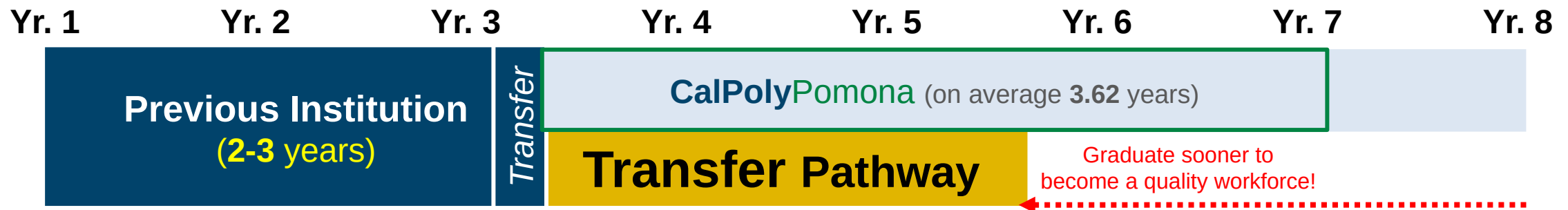
# Call for Action!

- ... Lastly, this proposed methodology can be expanded to other engineering disciplines and to state-wide efforts to support transfer students' success by offering the **Associate Degree for Transfer (ADT) in Engineering**. (NSF BRIDGE Proposal, 2022)



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- We would like to establish the **Transfer Pathway with your institution!** Please contact **Jeyoung Woo, Ph.D.** (Assistant Professor / Department of Civil Engineering / Cal Poly Pomona).



# Acknowledgement – Transfer Pathway MOU



**S. Terri Gomez, Ph.D.**  
Interim Provost and Vice President of Academic Affairs



**Jessica M. Wagoner**  
Sr. Associate Vice President – Enrollment Management & Services



**Brandon Tuck**  
Associate Vice President – Enrollment Management & Admissions



**Craig W. LaMunyon, Ph.D.**  
Interim Associate Vice President, Institutional Official



**Andrew Ketsdever, Ph.D.**  
Dean, College of Engineering



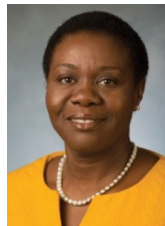
**Alison Baski, Ph.D.**  
Dean, College of Science (Former Interim Dean, College of Engineering)



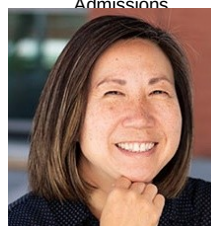
**M. Ron Yeung, Ph.D.**  
Associate Dean for Academic Affairs & Student Success



**Alan Fuchs, Ph.D.**  
Associate Dean for Research & Faculty Advancement



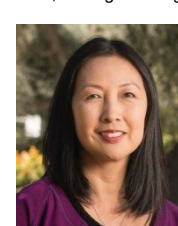
**Olukemi "Kemi" Sawyerr, Ph.D.**  
Associate Vice President – Academic Innovation



**Winny Dong, Ph.D.**  
Professor, Chemical and Materials Engineering



**Cecilia Santiago-Gonzalez, Ph.D.**  
Associate Vice President, Student Success & Learning Services



**Dora Lee, Ph.D.**  
Director of Academic Support



**Yasser Salem, Ph.D.**  
Professor and Chair, Department of Civil Engineering



**Jinsung Cho, Ph.D.**  
Associate Professor, Department of Civil Engineering



**Jeyoung Woo, Ph.D.**  
Assistant Professor, Department of Civil Engineering



**Kelly Fowler**  
Vice President of Instruction



**Denise Bailey, Ph.D.**  
Dean, Natural Sciences Division



**Eugene Mahmoud**  
Physics and Engineering



**Carolyn Robinson**  
Professor and co-Chair, Physics and Engineering



**Daniel Walden, Ph.D.**  
Superintendent/President



**Todd Scott, Ph.D.**  
Executive Vice President, Instruction, Innovation, and Student Success



**McKenzie Tarango, Ph.D.**  
Associate Vice President of Instruction



**Amy Azul**  
Instructional Dean - STEM



**Dana Hester, Ph.D.**  
Vice President of Academic Affairs



**Balaji Sethuramasamyraja, Ph.D.**  
Dean, Mathematics and Business Division



**Mariano Rubio**  
Instructor, Engineering, Automotive, Truck, and Power Systems



**Priscilla Englert**  
Instructor, Toyota T-TEN Coordinator



**Rebecca M. Eddy, Ph.D.**  
Founder & President



**Courtney Koletar, M.A.**  
Director of Data & Knowledge Management

# NSF BRIDGE Project



- **BRIDGE** (Bridging Institutions to Decrease Gaps in Engineering Education) Project Team (2023-2026, \$1M)



**Jeyoung Woo, Ph.D.**  
Civil Engineering



**Jinsung Cho, Ph.D.**  
Civil Engineering



**Winny Dong, Ph.D.**  
Chemical and Materials  
Engineering



**M. Ron Yeung, Ph.D.**  
COE Dean's Office  
Civil Engineering



**Denise Kenndy, Ph.D.**  
Early Childhood Studies



**Brian Ramirez, Ph.D.**  
Mechanical Engineering



**Eugene Mahmoud**  
Physics and Engineering



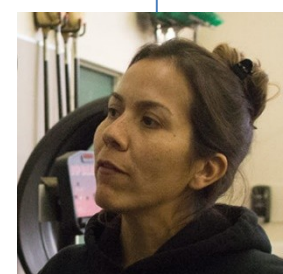
**Carolyn Robinson**  
Physics and Engineering



**Balaji Sethuramasamyraja, Ph.D.**  
Dean, Mathematics and Business Division



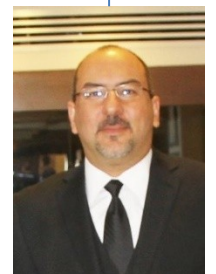
**Mariano Rubio**  
Automotive Technology



**Priscilla Englert**  
Automotive Technology



**Michael Butros**  
Physics and Mathematics



**Khalid Rubayi**  
Electronics & Computer  
Technology



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... Lastly, this proposed methodology can be expanded to other engineering disciplines and to **state-wide efforts** to support transfer students' success by offering the Associate Degree for Transfer (ADT) in Engineering. (NSF BRIDGE Proposal, 2022)

**Thank you!**

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**Jeyoung Woo**, Ph.D., PE, PMP | Associate Professor, Dept. of Civil Engineering (jwoo@cpp.edu)

**Cal Poly Pomona**

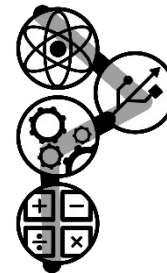




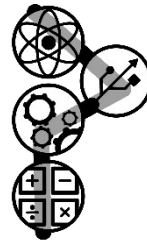
# PaCES

Pathways and Career Explorations in  
STEM, Student Success in Two Los  
Angeles Community Colleges  
Partnered with USC

Dr. Becky Green-Marroquin  
Los Angeles Valley College



# Pathways and Career Explorations in STEM (PaCES) Partners



Improving Undergraduate STEM Education: Hispanic-Serving  
Institutions Pathways (HUSIP) Increase Retention and Transfer Rates of  
STEM Majors at Two Los Angeles-Based Hispanic Serving  
Institutions

Award Number:  
2121999

# Goals



Increase retention of underrepresented (URM) students in STEM at LAVC and LAPC (Los Angeles Community College District)

Increase transfer rates of URM students and women from LAVC/LAPC to 4-year institutions as STEM majors

Gain insights into actual and perceived barriers to STEM retention, including factors that impact student decisions to stay or leave STEM majors, for implementation of changes/improvements of academic resources at LAVC and LAPC.



# PaCES: Pathways and Career Exploration in STEM

	Academic Year 2020-2021	Academic Year 2021-2022				Academic Year 2022-2023				Academic Year 2023-2024			
	SU 2021	FA 2021	WI 2021	SP 2022	SU 2022	FA 2022	WI 2022	SP 2023	SU 2023	FA 2023	WI 2023	SP 2024	SU 2024
<b>Pilot Cohort</b>		<div style="border: 1px solid black; border-radius: 15px; padding: 5px; background-color: #d8bfd8;">           BIO 285 Research    Capstone Research @WMSC    Career and Research Symposia    Internship         </div> <p style="text-align: center;">n=16 students</p>											
<b>Cohort A</b>	<div style="border: 1px dashed black; border-radius: 15px; padding: 5px; background-color: #add8e6;">           STEM Enrichment         </div>	<div style="border: 1px dashed black; border-radius: 15px; padding: 5px; background-color: #add8e6;">           College 101-STEM         </div>		<div style="border: 1px dashed black; border-radius: 15px; padding: 5px; background-color: #add8e6;">           Pathways to STEM         </div>		<div style="border: 1px solid black; border-radius: 15px; padding: 5px; background-color: #d8bfd8;">           BIO 285 Research    Capstone Research @WMSC    Career and Research Symposia    Internship         </div> <p style="text-align: center;">n=16 students</p>							
		n=80 students				→							
<b>Cohort B</b>		<div style="border: 1px dashed black; border-radius: 15px; padding: 5px; background-color: #add8e6;">           STEM Enrichment    College 101-STEM    Pathways to STEM         </div>				<div style="border: 1px solid black; border-radius: 15px; padding: 5px; background-color: #d8bfd8;">           BIO 285 Research    Capstone Research @WMSC    Career and Research Symposia    Internship         </div> <p style="text-align: center;">n=16 students</p>							
		n=80 students				→							

Blue = Tier 1

Purple = Tier 2





# Program Impact

- Showed students the range of careers available in the STEM field, and specifically beyond the medical field
- Encouraged students to pursue research opportunities
- Boosted self-confidence to pursue a STEM career
- Established a lasting cohort of science-minded peers
- Provided mentors for educational and career advice
- Gained science knowledge and science skills

*“I struggled to feel like I belonged in college and was mainly focused on taking the classes and getting the grades. This program helped me to finally feel part of the community and share science with others. As a first gen it was life-changing to find a support group ... that understood the journey and provided the ...”*



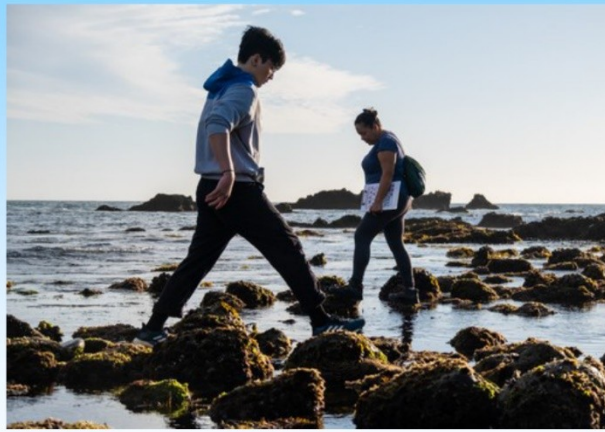


# Alumni Gratitude

*•“I really wish everyone could experience the PaCES program; it truly was the best thing I could have ever done for myself. Being a part of it was the highlight of my community college career.”*

*•“PaCES was monumental in making me see life outside of community college, as I really had no plans before entering PaCES.”*

*•“Learning to overcome impostor syndrome and network. Being able to talk to other students who also feel this way help. Props to the professors who care about the students.”*





# STEM Identity

*“I had already decided I wanted to pursue a degree in Biology but the PaCES program introduced me to scientific research. The Catalina experience and the student REU presentations solidified my interest in research, I would not have applied to an REU if I hadn't been exposed to them through PaCES.”*

*“Before PaCES I had a hard time trying to find my place at LAVC, tried many organizations and clubs but I never felt like I connected with people. I am ever grateful for giving me this sense of community and helping making me feel like I made the right choice in choosing my career and made me see that people like me can have these opportunities too.”*





# Outcomes



146 direct student participants – goal was 176

Less than 10% of these participants did not fit the URM or first-generation student criteria (inclusive program)

16 students have been selected for some sort of summer program

SACNAS chapter

Most have attended a science conference; one-quarter have presented a poster, a few have given a talk at a science conference, and one student has published a scientific paper

Variety of STEM careers have been highlighted

Catalina Island/USC Wrigley Institute for Environmental Studies (keystone) was very impactful for all attendees



# Learning Moments

Pandemic

Transportation

Conference experience

Work/Family schedules

Availability of research opportunities

Imposter syndrome/stigma of community college identity

# Thank you



- Prof. Pamela Byrd-Williams
- Dr. Shannon DeVaney
- Dr. Diane Kim
- Dr. Luis Cabrera
- Beth Rabin

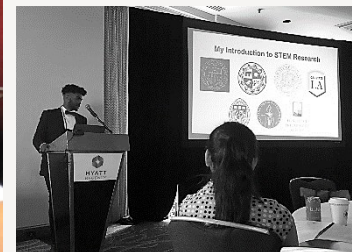
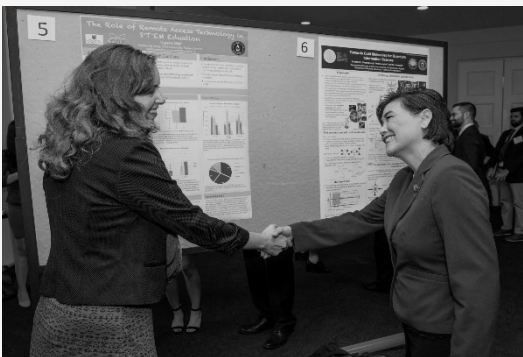
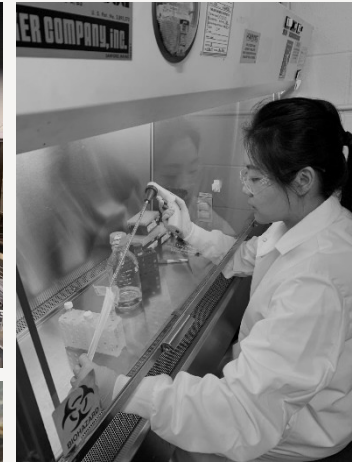
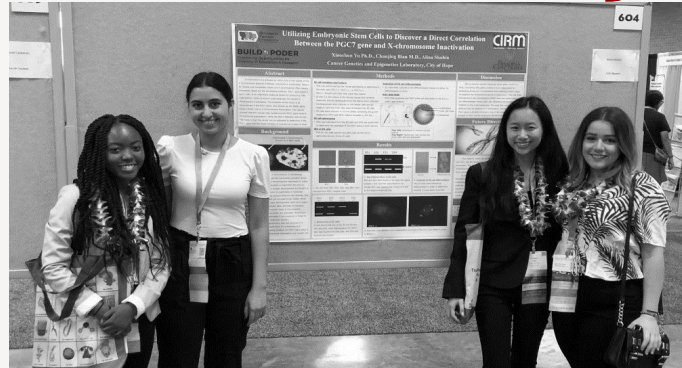
Award Number:  
2121999

Creating Pathways to Increase Retention and Transfer Rates of STEM Majors at Two Los Angeles-Based Hispanic Serving Institutions



# The Chips Act and the World of TAP

## Jared Ashcroft, Jason Spyres



# MNT-EC Mission:

**Grow the MNT technician workforce by fostering academic and industry mentorship between existing MNT partners and educators developing prospective community college MNT programs.**

## Objective 1:

Develop a coordinated national approach to advance MNT education.

## Objective 2:

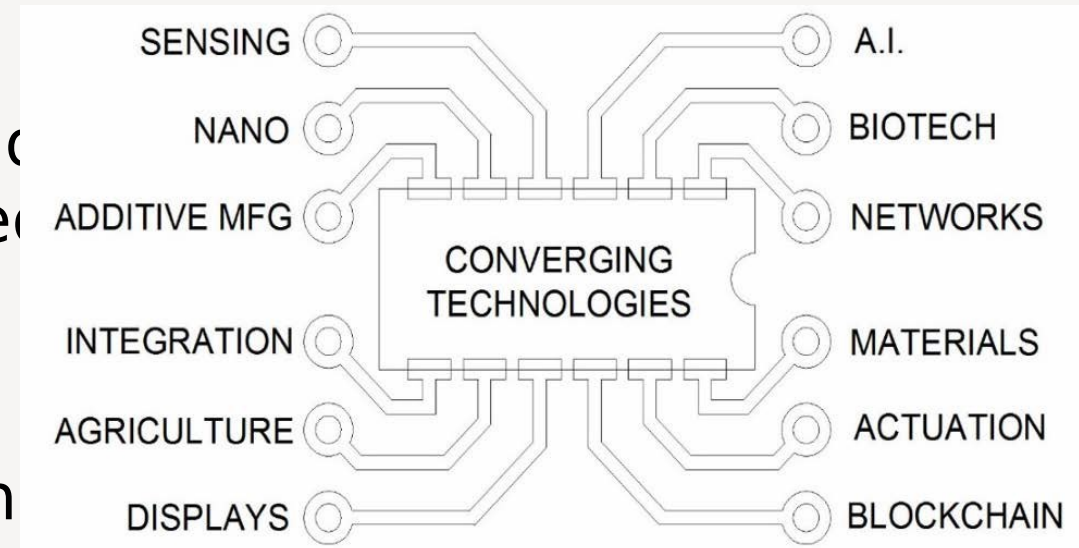
Deliver professional development to enhance knowledge, skills and abilities.

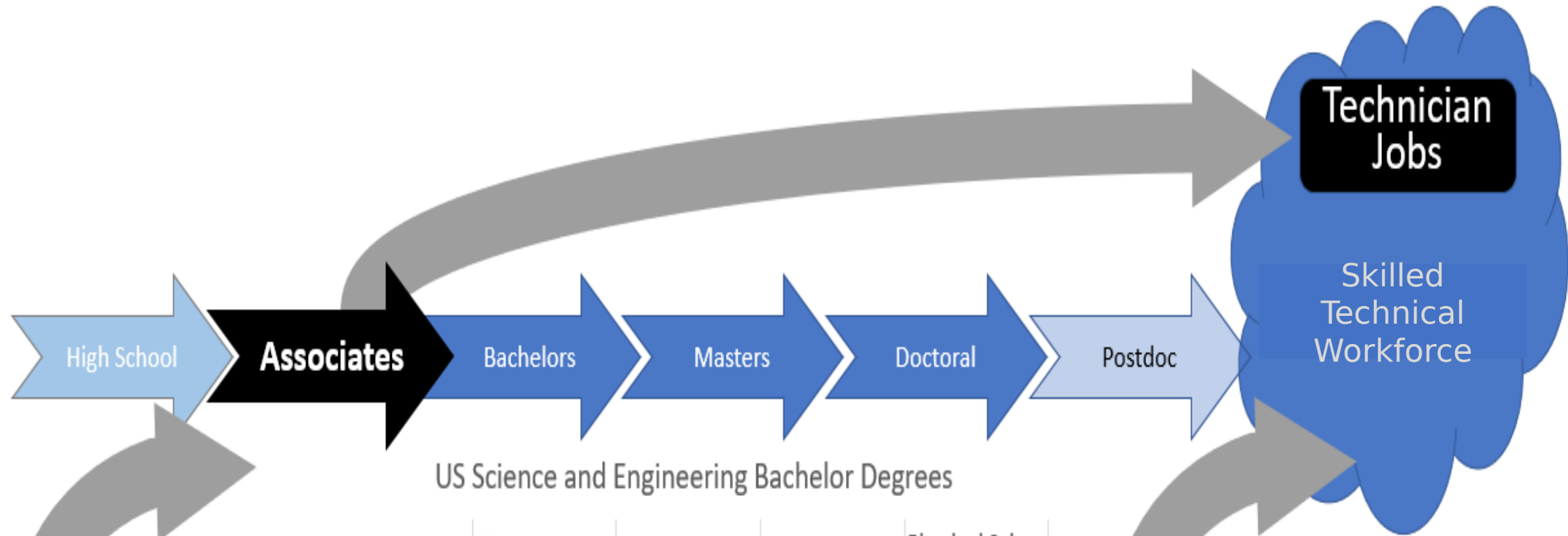
## Objective 3:

Conduct strategic outreach, recruitment, and retention of traditional and underrepresented faculty/students.

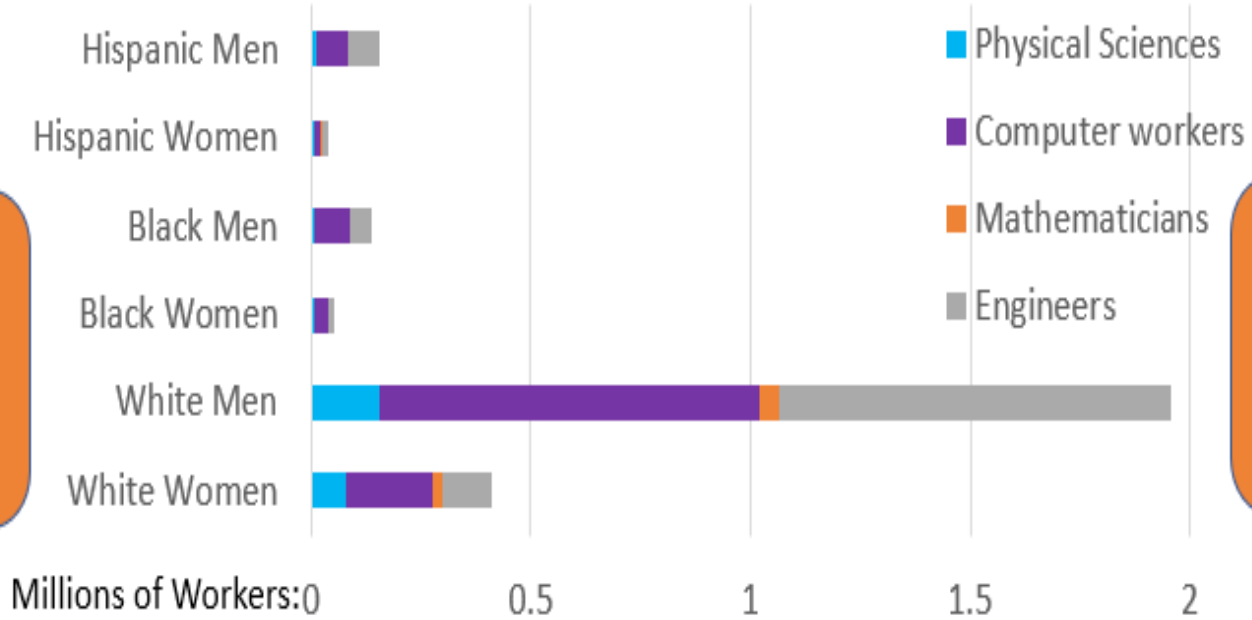
## Objective 4:

Create a deep Industry/Education Alliance that supports student success





US Science and Engineering Bachelor Degrees



High School Camps  
 Bridge Programs  
 Teacher Support

Physical Scientists  
 Computer Scientists  
 Mathematicians  
 Engineers

# MNT Collaborative Undergraduate Research Network



Esteban Presenting at Purdue  
Currently Ph.D. Program UC Irvine



Students at  
University of New  
Mexico  
Making Art Wafer  
and MEMS



Paula in lab at Penn State  
Currently at UC San Diego

**Support Community College Undergraduate Research;  
One of the most impactful practices to increase success  
and equity in STEM**



**One-on-One  
Mentoring**



**Group  
Mentoring**



**Peer-to-Peer  
Mentoring**



**MENTORING**



**Online Mentoring**



**Industry  
Mentoring**

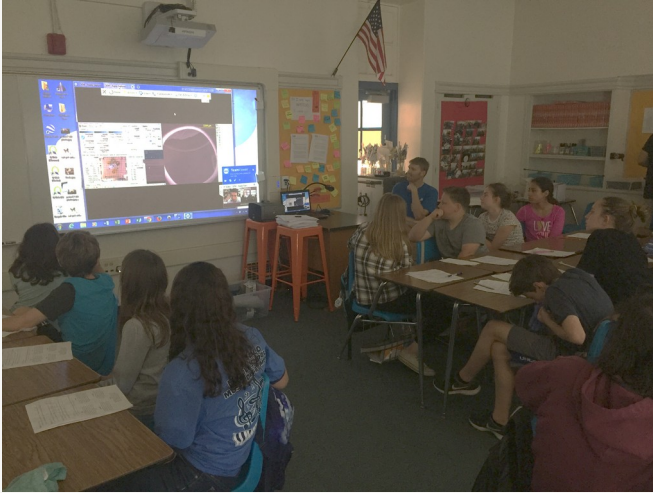


**Faculty Research  
Mentoring**

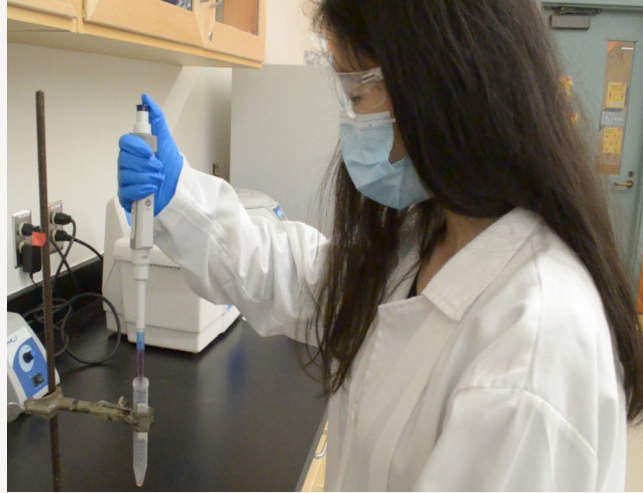


# Opportunities for Students: Micro Nano Technology Collaborative Undergraduate Research Network

Micro Nano Technology Education Center DUE #200



**Remote Research**



**In Lab at CC**



**Presentations**



**Summer REU**

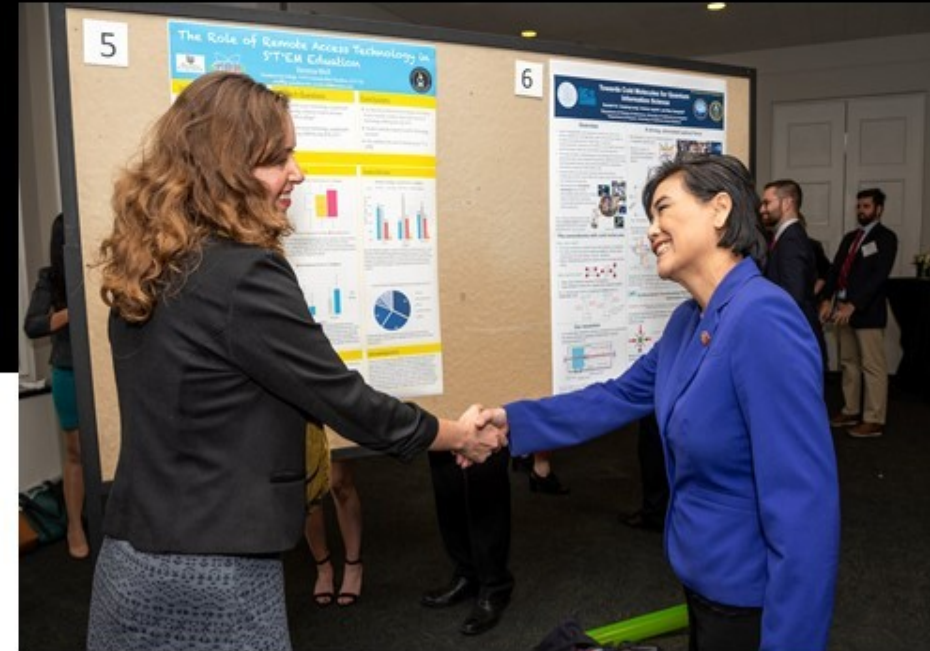


**Industry Engagement**



**Most Important: Have Fun**

# Focus on Student Outcomes: Over 50 students published, Over 100 Presentations



# The First Peer-Review Journal For the ATE community

- Editorial Board Members
- Article Submission & Author Guidelines
- Peer Review Process
- J ATE Content: “Technician Education”

**JATE**   
JOURNAL OF ADVANCED TECHNOLOGICAL EDUCATION  
Volume 1, Issue 1, 2022



# Leverage Online Learning Management Systems and Alternative Teaching Methods

Micro Nano Technology Education Center DUE #200

The screenshot shows a dashboard for Pasadena City College. On the left is a vertical navigation menu with icons for Account, Dashboard, Courses, Groups, Calendar, Inbox (115), History, Bookstore, and Commons. The main content area is titled "Dashboard" and contains four course cards:

- Fal22 CHEM 022 #72063 INTRO...**  
Fal22\_CHEM022\_72063  
Fall 2022
- PCCSTEM**  
PCCSTEM  
PCC
- MNT-EC Microsystems Resources**  
MNT-EC Microsystems Resou...  
Faculty Sandbox (18)
- Nanotechnology**  
Micro Nano Technology Educa...  
Micro Nano Technology Educa...  
PCC

The screenshot shows a tablet displaying the "MNTFOLIO" website. The page is titled "CHALLENGES" and features a "Create a challenge" button. Below this is a "Category:" dropdown menu set to "ALL", with a "FILTER" button and a "Clear all filters" link. The main content area displays "5 CHALLENGES" in a grid:

- NANOTECHNOLOGY**  
Nanotechnology and Environmental Justice
- TECHNICIAN CAREERS**  
Technicians are Problem Solvers  
**TALKING TECHNICIANS**  
MNT-EC
- MNT LAB**  
Nanomedicine: Nanoparticles in mRNA Vaccines
- NANOTECHNOLOGY**  
Blue Morpho Butterfly Wings



## What is AT<sup>3</sup>?

- **8-month community college internship program for students in programs that lead to technician jobs.**
- **Weekly Zoom sessions of industry and university partners to recruit and make aware of job and academic opportunities.**
- **Each student receives \$3,000 stipend, VR headset, and access to TAP 3D course modules.**
- **Facilitate entrance into summer internships funded by industry or university partners**
- **At conclusion of program, students get a certificate and job interviews to become technicians at industry partner sites.**
- **150 intersnhips available next two years.**



**Thank You for attending this  
presentation by Dr. Jared  
Ashcroft:**

**PI and Center Director  
Micro Nano Technology**

**NSF DUE #2000281 Education Center**

**[jmashcroft@pasadena.edu](mailto:jmashcroft@pasadena.edu)**

# ENHANCING THE EDUCATIONAL EXPERIENCE OF LATINX STUDENTS AT CAL POLY POMONA

BY JENNETTE RAMIREZ, STARS ASSISTANT DIRECTOR  
AND DR. AMANDA RIGGLE, ENGAGE PROGRAM  
COORDINATOR

# OVERVIEW - STARS PROGRAM

**The STARS Program is funded by a Department of Education grant and aims to increase the institutional capacity of CPP, Citrus, and Mt. SAC to engage Hispanic, Pell Grant-eligible, and underrepresented students in STEM disciplines through undergraduate research and related wrap-around services.**

## **Goals:**

- Expose students to undergraduate research early and throughout the student's college career
- Provide support services that ensure students develop a sense of STEM self-efficacy
- Provide proactive advising and mentoring
- Foster students' sense of belonging to both higher education and the STEM community.



# OVERVIEW - THE ENGAGE PROGRAM

The Engaging and Graduating Hispanic Students Through Undergraduate Research Program, or Engage for short, aims to provide broad access to undergraduate research for historically underserved students by creating a flexible model of engagement and through multiple touchpoints while also supporting student success.

A specific focus of Engage is to engage and support students who are traditionally under-served in undergraduate research opportunities, such as first-generation, under-represented minority, Pell-eligible, non-traditional, community college, and transfer students.

Along with research opportunities, Engage offers students a structure of wrap-around support through faculty, staff, and peer mentoring.



# STARS TEAM



**DR. WINNY DONG**  
DIRECTOR AND PI



**JENNETTE RAMIREZ**  
ASSISTANT DIRECTOR



**KAIRA PETTWAY**  
ASSISTANT COORDINATOR



**FERNANDO PADILLA**  
STUDENT ASSISTANT

# THE ENGAGE TEAM



**DR. WINNY DONG**

PI AND DIRECTOR OF ENGAGE



**DR. EVER BARRAZA**

PEER MENTOR COORDINATOR



**DR. SANDRA EMERSON**

WORKSHOP COORDINATOR



**DR. TAREK ELSHARHAWY**

STUDENT OUTREACH



**MICHAEL PHAM**

PROGRAM ADVISOR (STEM)



**DR. AMANDA RIGGLE**

LEAD PROGRAM COORDINATOR



**ARIANNE MURAMOTO**

PROGRAM ADVISOR (NON-STEM)

# BELONGING

**SOMETHING WE ARE ACTIVELY  
WORKING ON...**

One Scholar noted their research mentor  
**“helped me both with my personal  
stuff and with the research itself...  
Especially because I’m a first year, I  
don’t really have as much experience  
as some of the upperclassmen, but  
they were really helpful in explaining  
all the steps to me in a way that I can  
understand at my current level.”**





# THE ENGAGE PROGRAM

The Engage Program launched spring of 2023 at Cal Poly Pomona. The Engage Program is unique in that it offers faculty-mentored research experiences of both short- and long-term in length and covers all disciplines.

## 8 Week Research Projects

“Legacies of Racial Violence in the Era of Reconstruction” by Veronica Black, Mentored by Dr. Peter Hanink, Sociology

“Case Study: Lessons Learned from Structural Defects in Engineering Disasters” by William Huh, Mentored by Dr. Jeyoung Woo, Civil Engineering

## Semester Long Research Projects

“Impacts of Undergraduate Research on Student Engagement and Success” by Millet Inda and Juley Nguyen, Mentored by Dr. Ever Barraza, Director of the Office of Undergraduate Research

## Upcoming AY Long Research Projects

Studying disabled, queer, femme of color worldmaking and pedagogy in the classroom under the mentorship of Dr. Shayda Kefai

Designing, building, and coding a four-motor airborne drone using microcontrollers and 3D printed structural components under the mentorship of Dr. Lucia Riderer



## **STARS - SERVING LATINX**

In our first 2 years, we have served 84  
**STUDENTS** Latinx and/or low-income students

## **FACULTY-MENTORED RESEARCH**

“The graduate student I was helping has become a really good friend of mine. My mentor has been extremely supportive and aided me throughout the program.” “

## **COHORT-BUILDING ACTIVITIES**

- BioTrek Tour at Cal Poly Pomona
- Pool and BBQ Social
- Claremont Botanical Gardens Tour
- Arabian Horse Stables Tour
- Community Potluck
- Game Day!

WHILE OUR PROGRAM IS JUST BEGINNING, WE BELIEVE THAT OFFERING BOTH SHORT-TERM AND LONG-TERM FACULTY-MENTORED RESEARCH PROJECTS CAN BENEFIT LATINX COLLEGE STUDENTS BY:

- **Academic and Professional Growth:** Research experience enhances resumes and opens doors to graduate programs or jobs.
- **Cultural Representation:** Engaging in research can address community issues and increase diversity in research fields.
- **Retention and Success:** Research involvement is linked to higher engagement and retention rates.
- **Skill Development:** Short-term projects build basic skills quickly, while long-term projects offer deeper expertise.
- **Increased Confidence:** Short-term successes boost confidence, and long-term projects foster a greater sense of accomplishment.
- **Career Exploration:** Short-term projects help explore various fields; long-term projects deepen knowledge in specific areas.
- **Networking and Mentorship:** Both types of projects provide valuable connections with faculty and researchers.
- **Resource Access:** Short-term projects are more accessible; long-term projects provide more in-depth experiences.

The logo features the word "ENGAGE" in a bold, sans-serif font. The letters "E", "N", and "G" are blue, while "A", "G", and "E" are green. The text is centered over a bright orange circular background that has a textured, brush-stroke-like edge.

**ENGAGE**



# THANK YOU FOR ATTENDING OUR LIGHTNING TALK

FEEL FREE TO REACH OUT TO US

JENNETTE RAMIREZ - [JENNETTER@CPP.EDU](mailto:JENNETTER@CPP.EDU)  
DR. AMANDA RIGGLE - [ALRIGGLE@CPP.EDU](mailto:ALRIGGLE@CPP.EDU)

**ENGAGE**





# Building a STEM Mentorship Framework in a Community College Setting

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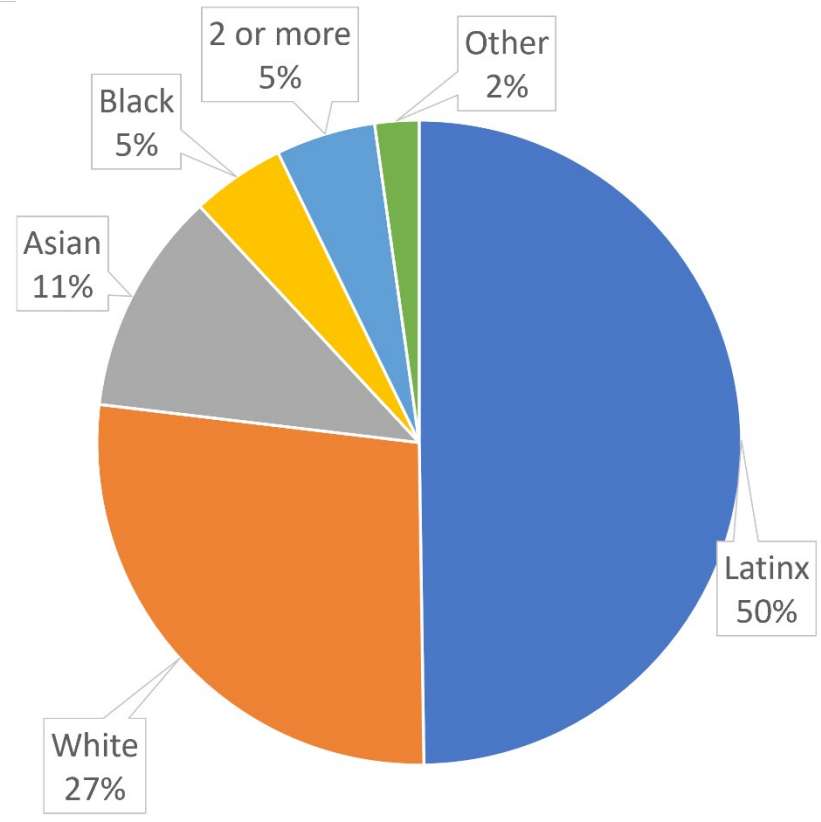
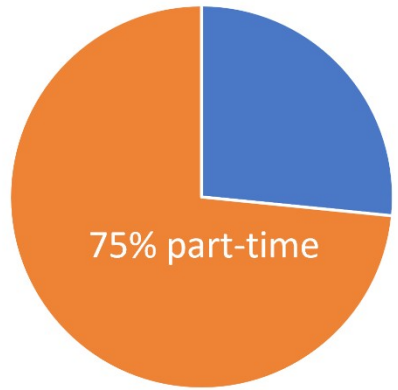
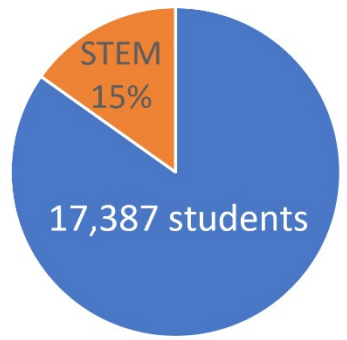
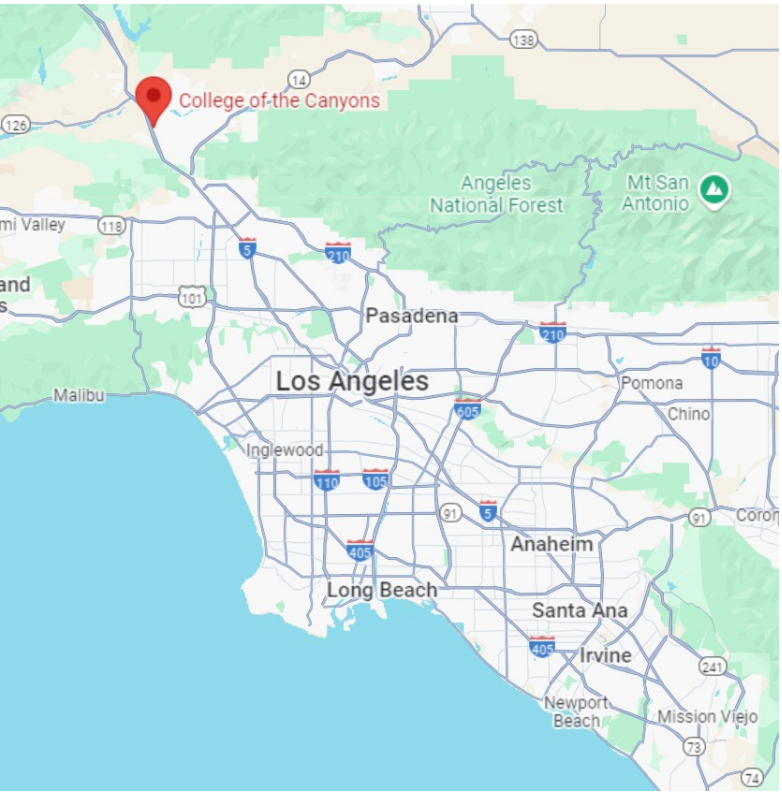
PATRICIA FOLEY, PH.D.

ASSOCIATE PROFESSOR IN ENGINEERING

S-STEM SCHOLARS PROGRAM DIRECTOR

COLLEGE OF THE CANYONS

# Who are we?



# Our S-STEM Vision

Based on [Enriquez \(2017\)](#)



Financial  
Capital

Cultural  
Capital



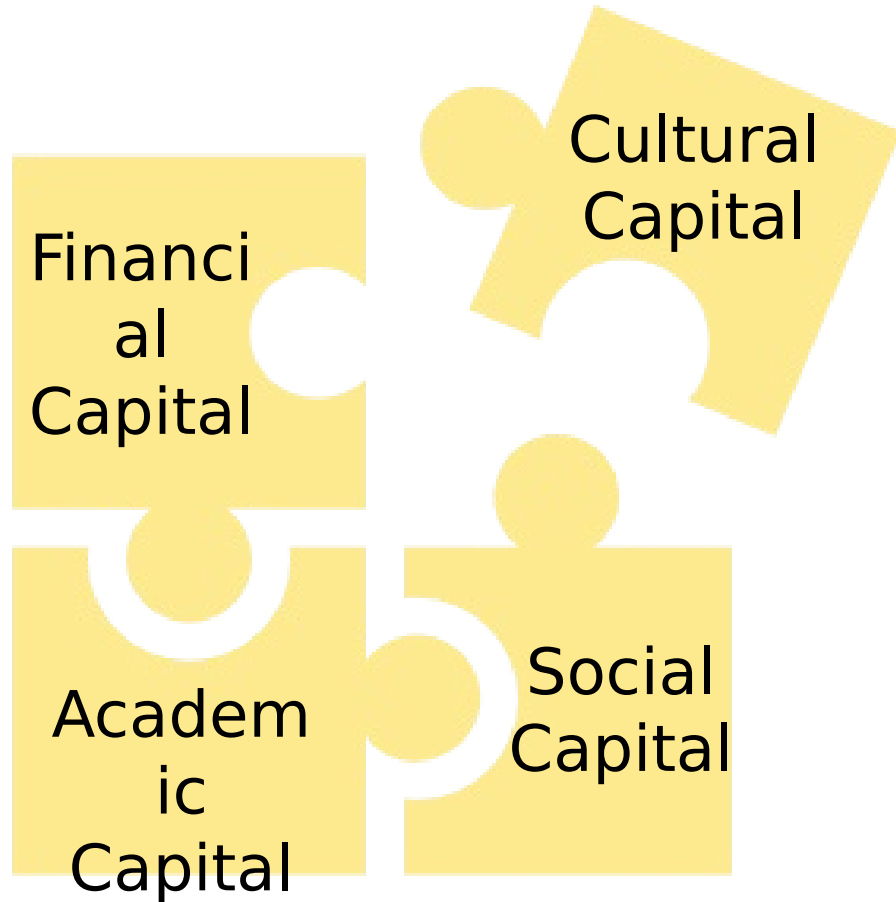
Academ  
ic  
Capital

Social  
Capital



# Our S-STEM Vision

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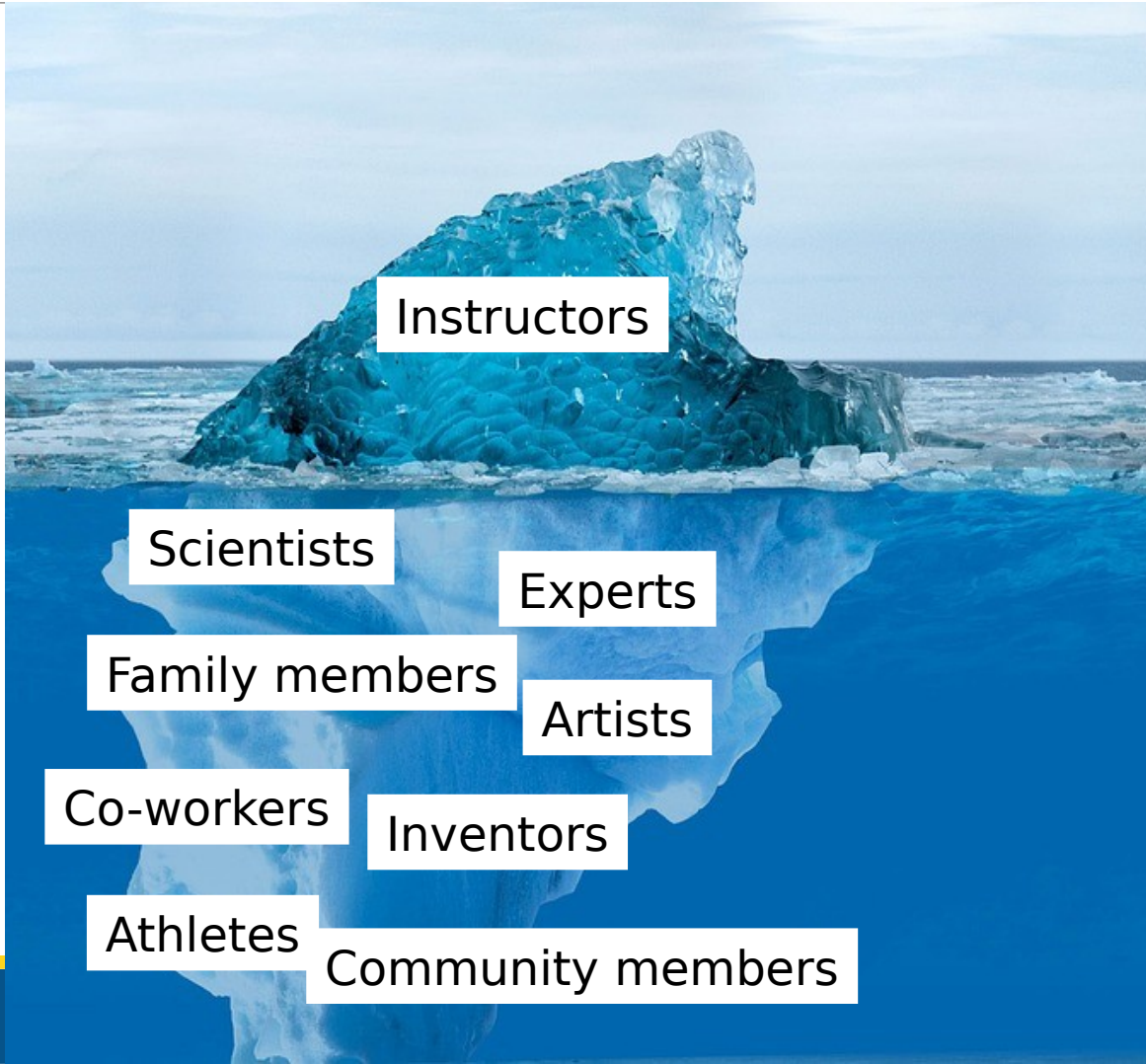
Based on [Enriquez \(2017\)](#)

## **Cultural capital**

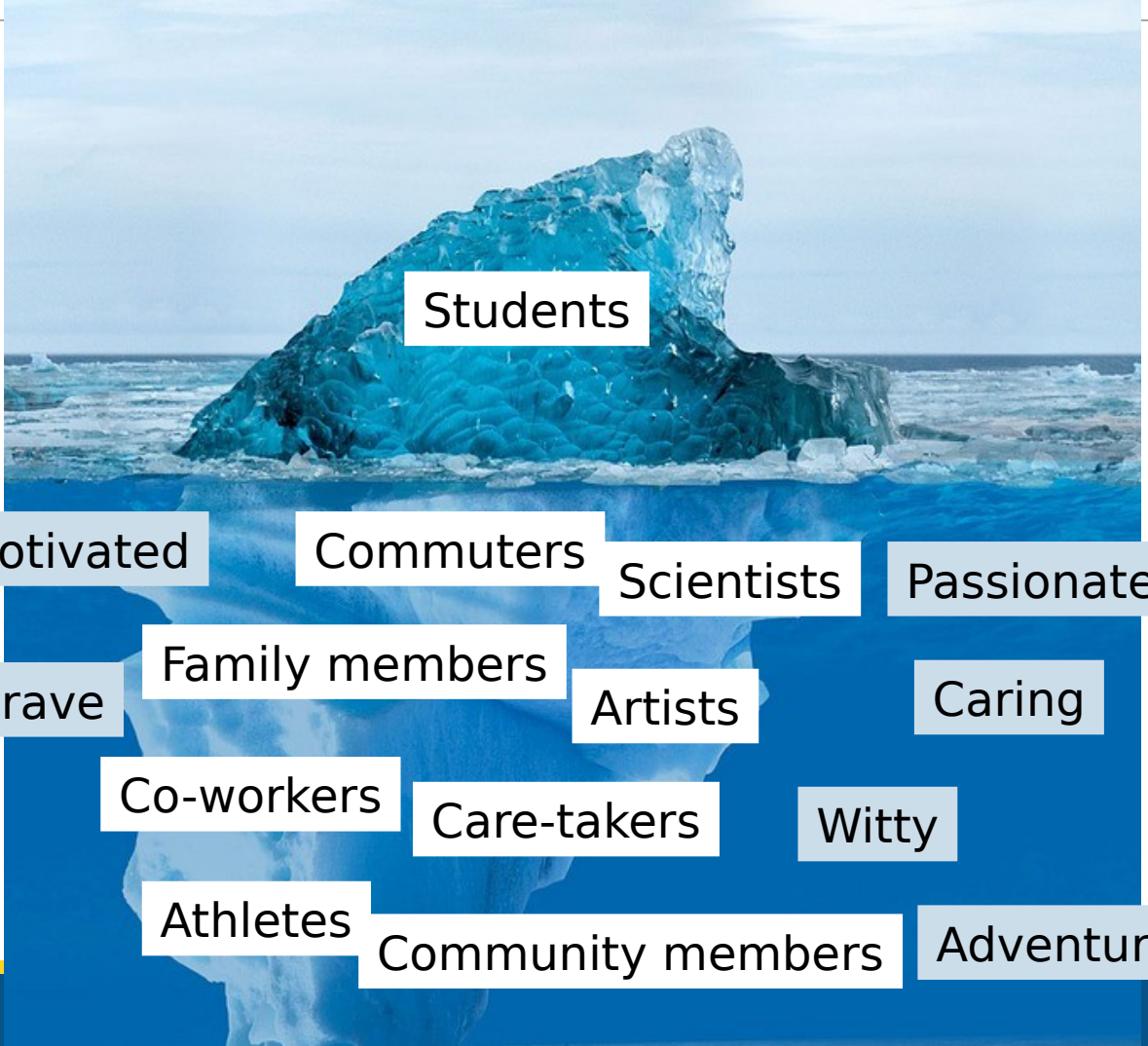
**Attitudes, knowledge, and behaviors recognized as “correct” by gatekeepers within STEM fields**

- ❖ **Credentials**
- ❖ **Verbal facility**
- ❖ **Dress and Manner**
- ❖ **Hidden curriculum**

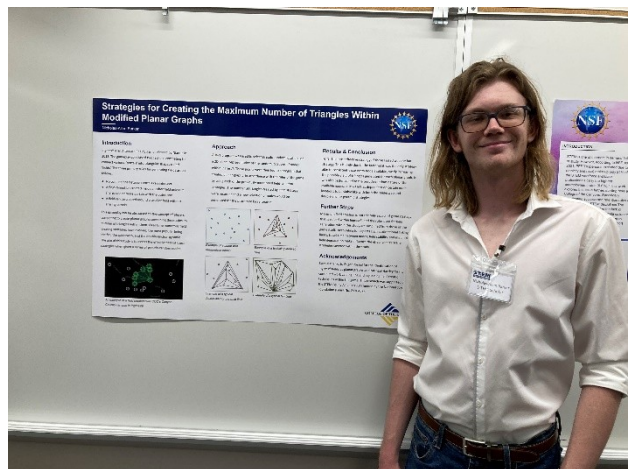
# Faculty Member as Mentors



# But there's more!



# S-STEM Scholars and Mentors Building Community



# Lessons we're learning

---

1. Our students want meaningful relationships in school...
2. But they don't necessarily know what mentorship looks like
3. Communication and connect are key



One size does not fit all  
***Relationships*** Matter



# Institutional Change in our Future

1. Space for faculty and students to connect



2. Mentorship Training

3. Support for (small) faculty-led projects



4. Professional Development/ Stipend/ Acknowledgement of Faculty Members as Mentors



[www.canyons.edu/stemscholars](http://www.canyons.edu/stemscholars)



THANK YOU!



**This work is based upon work supported by the  
National Science Foundation S-STEM Grant No.  
2130457**

**CSUN**®

 **OFFICE OF  
UNDERGRADUATE  
RESEARCH**

**estudio**

# From Access to Excellence: Empowering Diverse Voices in STEM Undergraduate Research

**Tissyana Camacho**, Child and Adolescent Development

**Gabriela Chavira**, Office of Undergraduate Research Director

**Crist Khachikian**, Civil Engineering

**California State University, Northridge**

# estudio



**E**xcellence in  
**S**tudent  
**T**raining for  
**U**ndergraduat  
**e**s,  
**D**iversity  
**I**nitiative  
**O**ffice



**ESTABLISH OFFICE OF  
UNDERGRADUATE  
RESEARCH**

Scale up research  
opportunities for  
STEM UG students

**CREATE RESEARCH  
TRAINING  
OPPORTUNITIES**

1. Expand UG curricula;
2. Create research certificates;
3. Create self-paced online modules

estudio

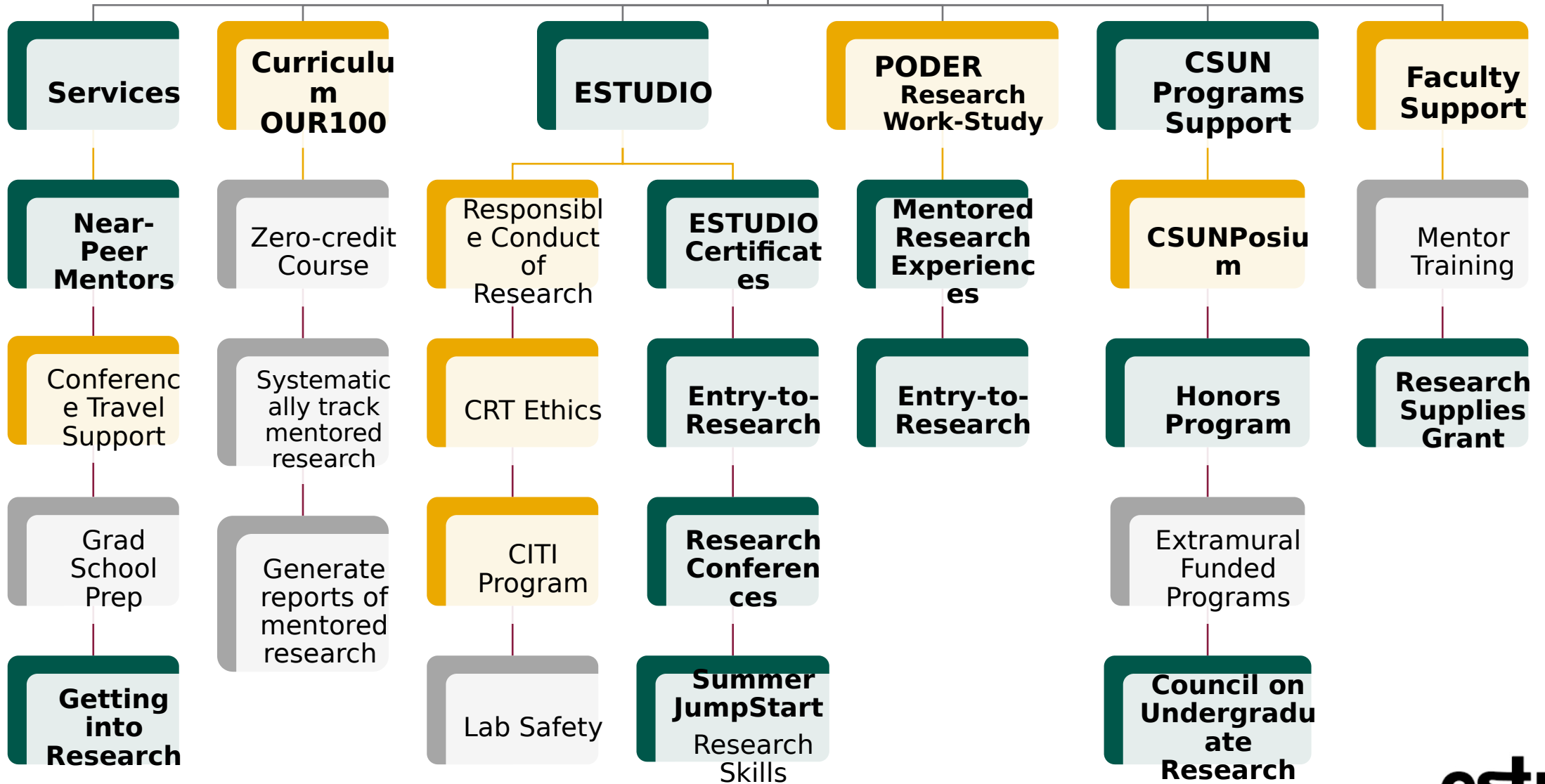
**CENTER MENTORING  
IN FACULTY  
DEVELOPMENT**

1. Bolster capacity & professional dev. opportunities for faculty;
2. Review dept RTP processes to value mentoring

**CREATE  
KNOWLEDGE &  
FRAMEWORK**

Develop a model to be  
shared with other HSIs and  
low-resourced  
comprehensive  
universities

# Office of Undergraduate Research (OUR)



# ESTUDIO Workshops and Research Certificates

## estudio

*Coming Soon: Fall 2024*

### Entry-to-Research

- What is Research?
- Finding a Research Mentor
- Mentoring Relationships
- Email Etiquette
- Time Management

### Research Conference

- Writing a Conference Abstract
- Attending a Research Conference
- Preparing an Oral Presentation
- Creating a Research Poster Presentation
- Elevator Pitch



### Professional Development

- Curriculum Vitae
- Creating a Resumé
- Summer Research Opportunities
- Getting Strong Letters of Recommendation
- Using Social Media Responsibly

### Research Ethics

- Responsible Conduct of Research
  - CITI Program
- Ethical Issues in Research
- Beyond Tuskegee: Racism in American Research
- Data Management Practices
- CRISPR and Return to Eugenics



# Three Institutional Projects



Understanding and narrowing attitude/behavior gap between students and faculty



Analyzing and suggesting changes to RTP to support mentored research



The *ESTUDIO* minimal viable product (MVP) that provides a measurable effect

# 2023-24 Accomplishments

## OUR Undergraduate Student Engagement

360 Undergraduate students engaged in OUR activities!

## ESTUDIO Workshops and Certificates

- 160 Attended OUR Workshops
- 5 Entry-to-Research Workshops offered
- 5 Research Conference Workshops offered
- 30 Research Certificates Awarded

## Paid Research Opportunities

- 61 Participated in mentored research through LAEP
- 27 Participated in the ESTUDIO Summer JumpStart training

## Research Funds and Travel Support

- 31 Research Supplies Grants awarded
- 25 Attended NCUR in Long Beach, CA

## Getting into Research

- 130 Attended the Getting into Research event
- 30 Faculty participated in the Research Faculty Mixer





# Institutional Project Update

- All institutional research projects are ongoing.
- Student survey to assess their attitudes and behaviors toward undergraduate research will be administered in Fall 2024. (Faculty survey – Spring 2025)
- External evaluation team is analyzing the RTP language regarding the value of mentoring.
- We are carefully documenting the processes of establishing OUR and strategies to increase research capacity for faculty and students.

# Next Steps and Long-Term Plans

## Student Training:

- IXLA – converting to self-paced modules
  - 2024-25
    - Entry to Research
    - Research Conference
  - 2025-26
    - Professional Development
- Continue expanding ESTUDIO & OUR
  - Apply for external funding

## Institutional Project Activities:

- **#1:** Narrowing Faculty-Student Gap: Administer student surveys (fall 2024) and faculty surveys (spring 2025)
- **#2:** Valuing of Mentoring in Retention, Tenure and Promotion (RTP)
  - Ongoing evaluation of Section 600 language by the evaluation team

# Summary

- CSUN's Institutional Transformation Project (ITP) sought to increase research capacity for undergraduate students through:
  - Establishing a centralized research office - *ESTUDIO*
  - The NSF HSI grant was the catalyst for establishing OUR in 2023
    - ESTUDIO is part of OUR
    - Currently offering four research certificates to prepare students for undergraduate research activities
      - Annually expanding OUR workshops and research certificates
  - Understanding and narrowing attitude and behavior gap between students and faculty regarding undergraduate research
  - Valuing mentoring through research endeavors in RTP process
  - Documenting the process and lessons learned in OUR institutionalization efforts

## Questions?

Tissyana Camacho


- [tissyana.camacho@csun.edu](mailto:tissyana.camacho@csun.edu)

Office of Undergraduate Research

- [www.csun.edu/OUR](http://www.csun.edu/OUR)
- [our@csun.edu](mailto:our@csun.edu)

## Acknowledgments

- NSF, Improving Undergraduate STEM Education: Hispanic-Serving Institution, Award: ID 2225248
- NIGMS, Building Infrastructure Leading to Diversity Awards
  - RL5 GM118975
  - TL4 GM118977
  - UL1 GM118976



National Science Foundation:  
Hispanic Serving Institution  
Improving Undergraduate  
STEM Education

**Cal Poly Pomona**  
**INVESTS**

Olukemi Sawyerr, PhD  
Associate Vice President  
Office of Academic Innovation  
Cal Poly Pomona

# Agenda

Cal Poly Pomona **I**ntentional **V**enture  
**E**ngaging **S**TEM **S**tudents (CPP INVESTS)

Goal 1: High Impact Practices (HIPs)

Goal 2: Badging

Goal 3: Faculty Professional Development

# CPP INVESTS

Cal Poly Pomona **I**ntentional **V**enture **E**ngaging **S**TEM **S**tudents (CPP INVESTS) aims to enhance the quality of undergraduate STEM education and the recruitment, retention, and graduation rates of STEM students at Cal Poly Pomona by expanding student pathways to continued STEM education and integration into the STEM workforce.



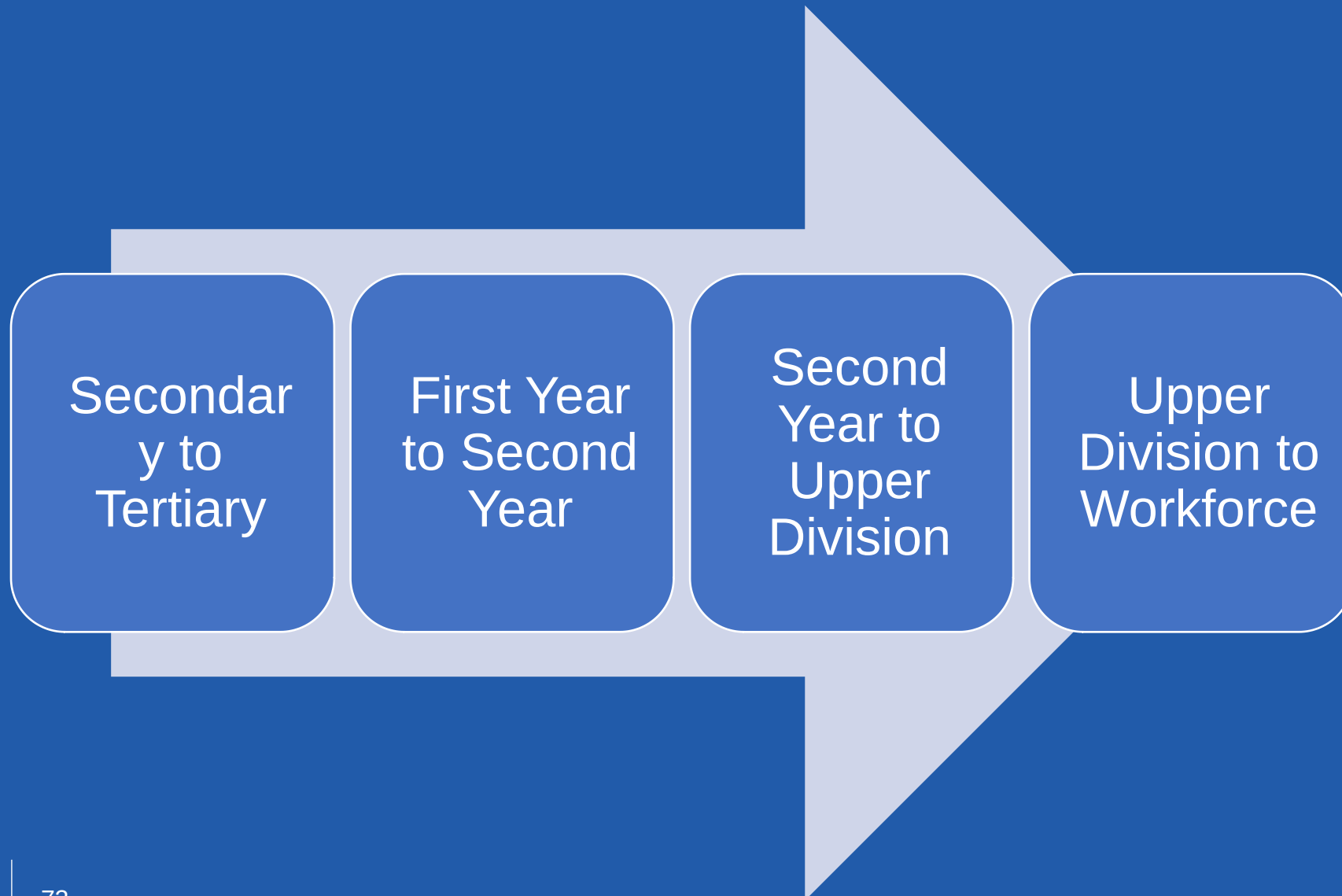
# CPP INVESTS

Embed experiential learning through selected **High Impact Practices (HIPs)** at **critical transitions** in the STEM student life cycle to engage students from their first year to post-graduation with particular attention to students from underrepresented and minoritized groups and those who are first-generation.





# Goal 1 CPP INVESTS – Critical Transitions



# Goal 1 CPP INVESTS – Selected HIPs

First-year seminars

Undergraduate  
Research

Internships

# Goal 2 CPP INVESTS

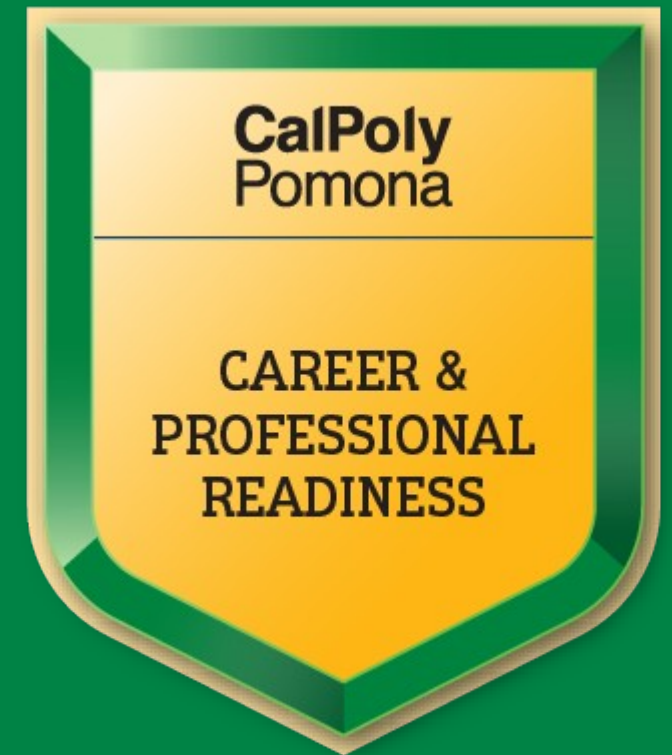
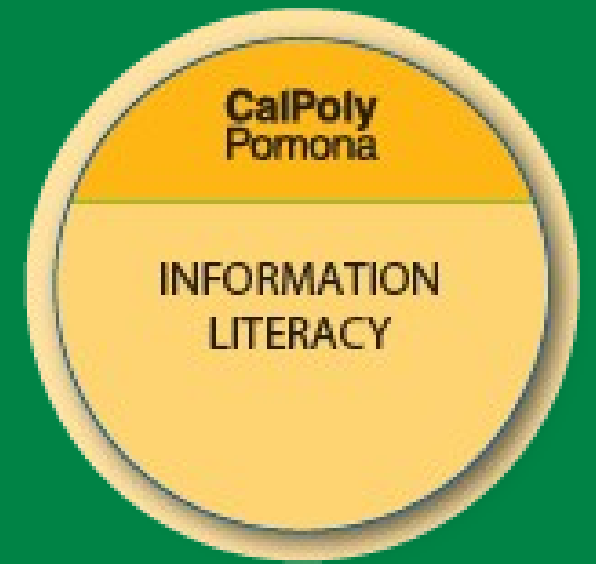
Implement four alternative learning records (ALRs) to enhance the transition of STEM students into the STEM workforce:

Leadership career development pathway

1. Teamwork
2. Communication

Research career development pathway


3. Information literacy
4. Problem solving ALRs



# Goal 3 CPP INVESTS

Provide STEM faculty professional development opportunities anchored in inclusion, diversity, equity, and accessibility through:

1. Identifying and coaching STEM department champions to support efforts in adopting culturally relevant pedagogies and developing more effective equity work initiatives.
2. Offering Faculty Institutes



National Science Foundation:  
Hispanic Serving Institution  
Improving Undergraduate  
STEM Education

**Cal Poly Pomona**  
**INVESTS**

Olukemi Sawyerr, PhD  
Associate Vice President  
Office of Academic Innovation  
Cal Poly Pomona



NSF Regional HSI Conference on Servingness

# Project CIELO

Culturally Informed Early Learning  
Opportunities for SLP and ECSE

Dr. Robin Dodds, Dr. Erica Ellis and Dr. Imelda Zapata

September 20, 2024

Cal State LA



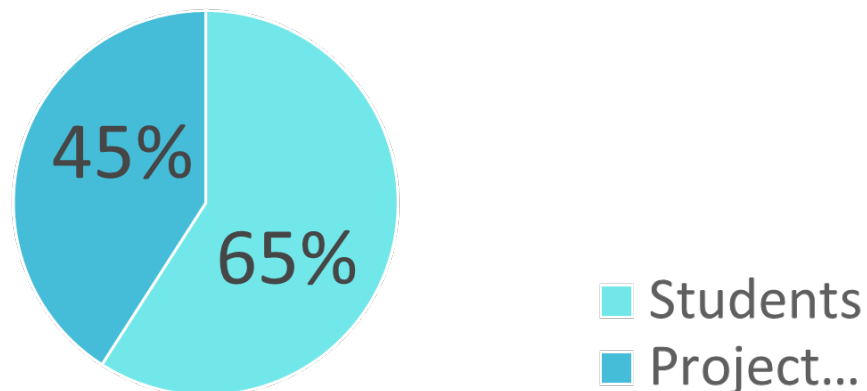
# Introduction

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This project responds to and addresses a critical, timely and long-standing need for highly qualified bilingual personnel prepared for interdisciplinary practice to support children with disabilities in LA County, the state of California and the nation.

Project CIELO has received a Personnel Development Grant awarded through the Office of Special Education Programs (OSEP) which aims to “improve results for infants, toddlers, children and youth with disabilities ages birth through 21.”

Funding = \$1.1 Million



# Background

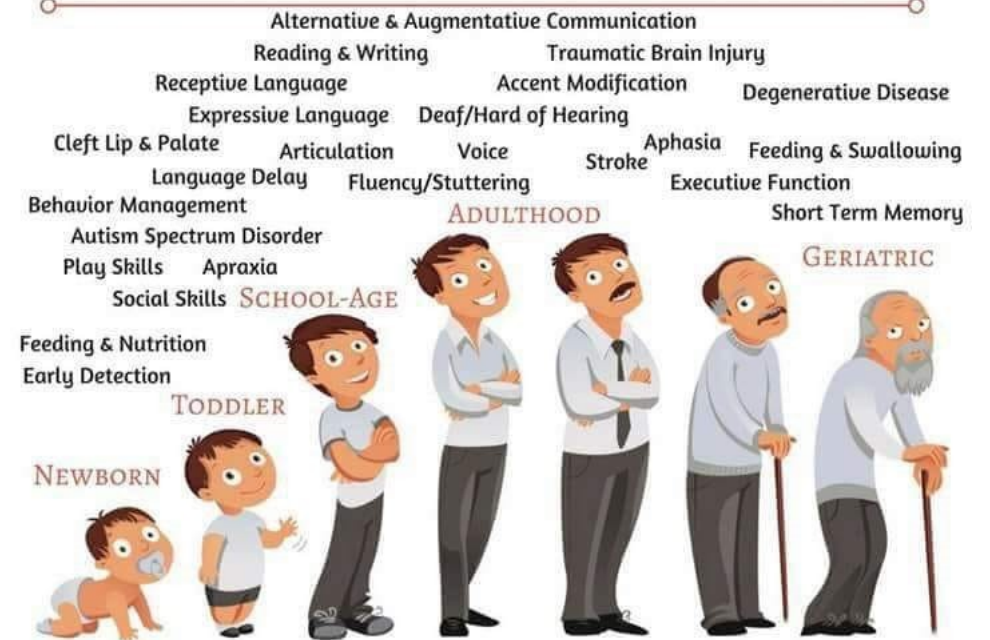
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Speech Language Pathology (SLP)

SLPs work with the full range of human communication and swallowing disorders in individuals of all ages

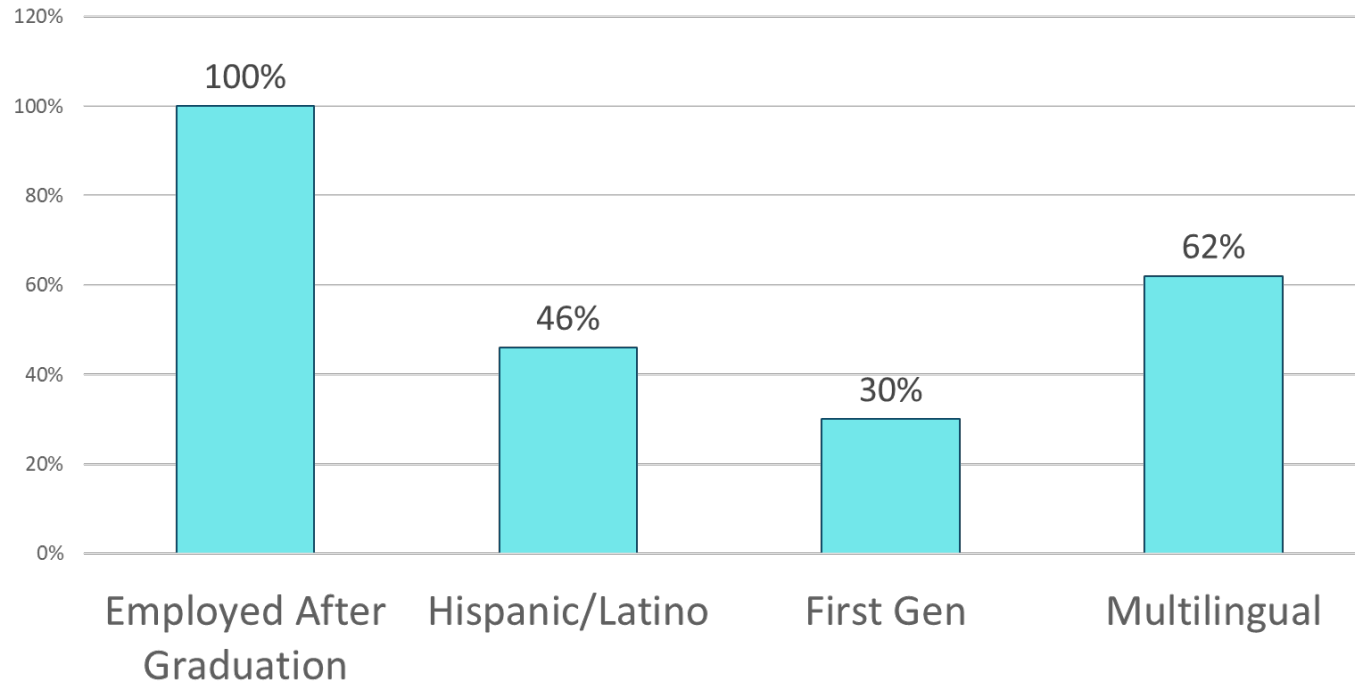
## Who needs a Speech-Language Pathologist?





# Background

## Speech Language Pathology (SLP) Recent Cohorts



Cal State LA's MA in SLP program has graduated hundreds of students who are employed across a broad range of clinical settings including hospitals, private practice, early intervention settings and a majority are employed in local schools.

# Background ●●●●

---

## Early Childhood Special Education (ECSE)

What is ECSE and who do we serve:

The ECSE preliminary credential program with embedded authorizations in Autism and English Learners is a post-baccalaureate program designed so that full-time preservice students can complete the program in two years. **Students in the program work with children**



# Background

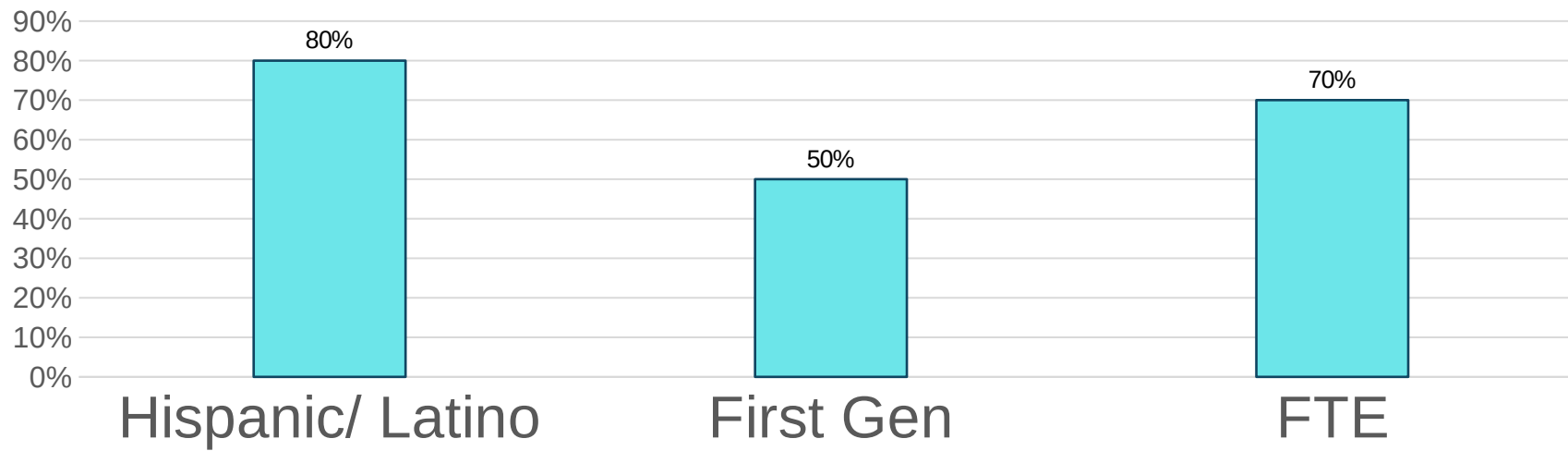


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## Early Language Special Education (ECSE)

What is ECSE and who do we serve:

### Program Graduates



# Objectives

---



- Increase the cultural and linguistic diversity and quality of scholar applicants
  - Improve interdisciplinary practices leading to improved student & family outcomes
  - Implement a rigorous evidence-based program
  - Retain, support & graduate 20 scholars
  - Reduce shortage of culturally informed and/or bilingual ECSE & SLPs in LA County
-

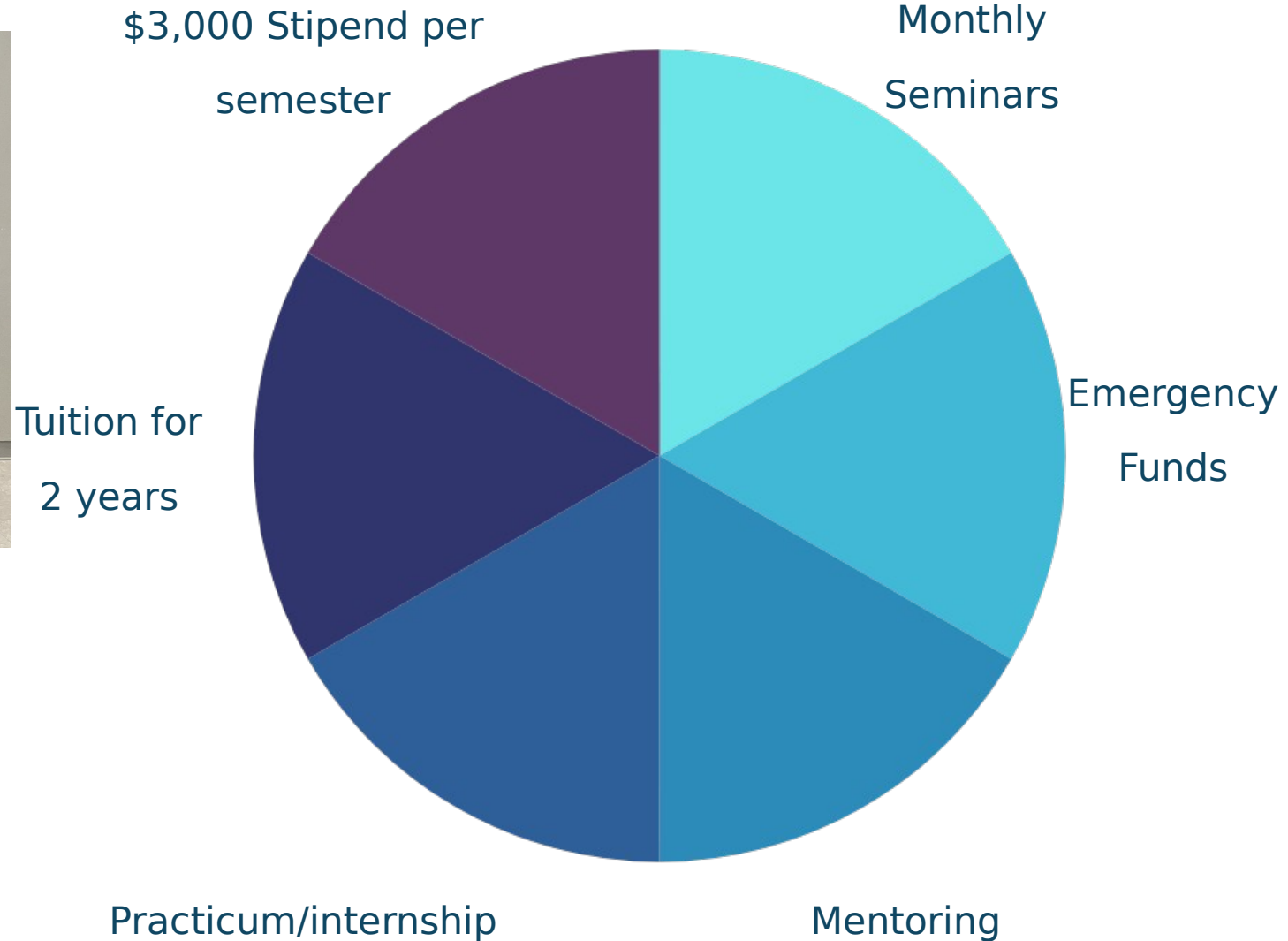
# Strategic supports

## Cohort 1

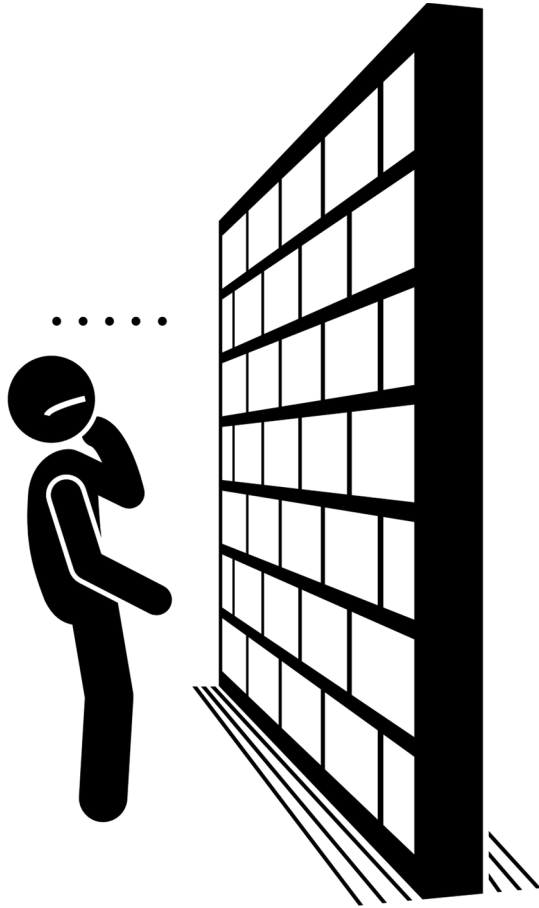


8/10 Bilingual  
1/10 Black/African American  
10/10 Hispanic/Latino

8/10 First Gen



# Barriers for Support



- OSEP Funding schedule not matching academic schedule
- Challenging communication between UAS and the University
- No avenue to provide students with extra funding above cost of attendance
- No out-of-the-box thinking- no willingness to innovate from Univ. or UAS
- Information b/w OSEP and UAS can be contradictory
- Slow/inefficient processes- multiple forms for the same process
- Inability to pay student tuition directly to institution
- DACA students are not eligible for these funds
- There is no training or examples of processes, need to figure it out by trial and error

.....



Thank

you