

DISCOVERY



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OUR VISION

Fostering curiosity and a culture
of scientific discovery

OUR MISSION

Educate, mentor, and inspire
students through scientific
inquiry and hands-on learning

CORE VALUES

Curiosity
Integrity
Collaboration
Inclusivity
Innovation

COVER PHOTO:

The 2022 Science Research Symposium

DEAN'S MESSAGE

On May 22 we celebrated commencement for the Class of 2022. We call it commencement because it's a beginning – a new beginning for our graduates who are leaving campus life and embarking on their careers.

At the ceremony I reminded our graduates that they will always be a member of the Cal Poly Pomona community which includes students, alumni, faculty, staff, and donors.

Our faculty and staff support our mission to educate, mentor, and inspire students through scientific inquiry and hands-on learning. Our donors, many of whom are alumni, provide financial resources that allow additional opportunities for students. The success of our alumni demonstrates the value of a polytechnic education and provides inspiration to our students.

In this issue of Discovery Magazine you'll see many examples of how our College of Science community is making a difference in the world. Faculty are conducting important research while mentoring students and providing them with new opportunities. Partnerships and programs are increasing opportunities for underserved students and increasing diversity in the sciences.

You'll meet Dean's Circle members who provide a valuable link to industry. You'll also learn about events that allow us to stay connected as a community.

We invite you to be an active member of our community by participating in an activity that is meaningful to you, attending an event, and supporting the college.

— Alison Baski, Dean
College of Science



Unfathomable Curiosity: The Amazing Career of Biological Sciences Emeritus Professor Peter Castro, Ph.D.

“Every day is an interesting experience for me.” With these words Emeritus Professor Peter Castro has given the through-line for his very productive and rewarding life. To be sure, his insatiable quest for knowledge has taken him to the bottom of the ocean, around the world, through the halls of academia and deep inside his own ever-curious mind.

During his celebrated tenure at the Cal Poly Pomona College of Science he greatly expanded the marine biology curriculum, researched relentlessly, published prodigiously, gave generously, and inspired students across the academic spectrum.

So much life beneath the surface

Born and raised in Puerto Rico, Castro began his fascination with the natural world early, heading to the ocean with his mask and snorkel to glimpse the world beneath the waves. Later, a high school field trip to a marine biology lab would cinch his career choice.

After completing undergraduate work at the University of Puerto Rico, he was drawn to the Hawaiian Islands, where he earned master’s and doctoral degrees in Marine Zoology at the University of Hawaii. The locale also afforded an idyllic setting for an inquisitive scientist: a stint as caretaker at the Hawaii Institute of Marine Biology’s research center on Coconut Island. There he was free to pursue unhindered his focus on parasitology and symbiosis in deep-water crustaceans.

Castro comes to Cal Poly Pomona

It was parasitology which drew Castro to Cal Poly Pomona in 1972. The school needed someone to teach the subject and, in his words, “the faculty was very enthusiastic about developing a variety of courses.”

Fortunately, they found someone who personifies enthusiasm for learning. During his four-decade term here Castro stirred the minds of thousands of students—not just for studying marine science but the natural world as a whole. Moreover, he inspired many young scholars to seek a doctoral degree in marine biology.

As a lifetime learner himself, Castro has enriched his core

expertise through voracious reading across the breadth of other sciences. He even earned a bachelor’s degree in history and a minor in art History while teaching at CPP.

“I have to constantly be aware of new things... and discoveries. It’s a lot of work, but I really love it.”

Castro has been outspoken regarding climate change and the environment, a cause he supported through a generous bequest to the College of Science.

To support student success, he funded the Rachel Carson Environmental Science Scholarship, and the Honors Scholarship for the Study of the Environment. In 2021, he established the Peter Castro Evolution and Biodiversity Scholarship, and the Peter Castro Marine Biology Faculty Research Award which will be used to support faculty research in the Biological Sciences department.

He is also co-author of what is considered one of the most important and widely used textbooks in the field, *Marine Biology*, which has been translated into many languages, and is now in its eleventh edition. In addition, Castro has served as a visiting professor around the world, including Ukraine, where he stood as a Fulbright Scholar at Odessa State University.

Always looking ahead

His enthusiasm hasn’t ebbed since stepping down from full-time teaching in 2003. Upending the notion of retirement, Castro is still actively writing—notably for the next edition of his textbook and is the avid editor-in-chief of the *Journal of Crustacean Biology*.

Always one to look toward the next frontier, Castro’s intense work leaves him scant time for reflection. Yet he fondly remembers those earliest days when he first glimpsed life underwater, describing it as “incredibly beautiful and diverse.” Given his impressive career, he clearly feels the same way about the world’s vast ocean of knowledge.



AWARD WINNING FACULTY



PAUL BEARDSLEY
*Professor, Biological Sciences,
& Director of CEMaST*

Provost's Award for Excellence in Teaching

Paul Beardsley joined Cal Poly Pomona in 2011 and has thoroughly enjoyed serving as an educator for middle school through postdoctoral students for over 27 years. He is committed to active “learning by doing” and inclusive pedagogy that motivates students in accordance with Robert Frost who said, “I am not a teacher, but an awakener.”

Beardsley is a strong believer in CPP students and in the teacher/scholar model. At CPP he has served as Principal Investigator or Co-PI for grants totalling over \$11.4 million to develop and study teaching interventions to support all students. Currently, he is PI for the \$1.5 million Polytechnic for All: STEM Success via an Inclusive institutiON (PASSION) NSF HSI project. He delivers intensive professional development for teachers across the country in collaborative partnerships with school districts, universities, and scientific research institutes. Beardsley is the originator of the Biology Learning Assistant program at CPP.



SAMIR ANZ
*Professor, Chemistry and
Biochemistry*

Outstanding Faculty Advisor of the Year

Professor Samir Anz has had a distinguished career spanning over 20 years. In addition to the academic advising duties that are required of most chemistry faculty, Anz also serves on the orientation committee, supporting the success of the program.

Anz goes above and beyond to support student success, offering advising hours outside of normal office hours, and counseling students who are changing majors, or seeking a chemistry minor. He also personally mentors students in the Co-op Education program where they gain valuable work experience.



JAYSON SMITH
Professor, Biological Sciences

College of Science Ralph W. Ames Distinguished Research Award

Professor Smith is a marine conservation ecologist with particular interest in anthropogenic disturbances on ecosystem functioning and community structure of coastal habitats. Smith has an outstanding record of scholarly work and has published 21 peer-reviewed publications, including nine with students as co-authors.

Since coming to CPP in 2011, Smith has been involved in 19 external grants/contracts totaling more than \$10 million, with ~\$1.5 million coming to CPP.

Smith exemplifies the Teacher-Scholar model through his extensive research mentoring. He shares his expertise in intertidal plant species biology in his Marine Botany course, incorporating field trips to several of his ongoing research sites.



ARLO CAINE
*Professor, Mathematics and
Statistics*

College of Science Distinguished Teaching Award

Professor Arlo Caine's goal is to teach students “how to read math” and his teaching style is engaging and inclusive. Since 2011, he has designed and taught over 20 distinct math courses, including calculus, abstract linear algebra, and topology. He is also a CEMaST Faculty Fellow and co-PI on the NSF PASSION grant. Caine engages students through interactive ConcepTests and group activities, and views his role as a storyteller and guide, taking students on a journey of learning.

WALL OF COOL

The Wall of COOL award is from the Center for the Advancement of Faculty Excellence (CAFE). The award recognizes excellent courses that effectively use technology to enhance student learning and success.

COOL stands for Celebrating Outstanding Opportunities for Learning.



BERIT GIVENS
*Professor & Department Chair,
Mathematics and Statistics*

Berit Givens received the Wall of COOL award for her math class Combinatorics. Combinatorics is about counting, specifically about counting complicated things like the number of possible passwords, or card combinations in games of chance. Givens' excitement for the subject is palpable. “It's so clever and often surprising. The questions we're answering are like puzzles or riddles. It's beautiful and fun and fascinating,” Givens said.

Her class design incorporates videos with text explaining them. She also recorded classes and posted notes. Givens believes students thrive on structure so she provided a solid, uniform framework so students could focus on learning.



JANEL ORTIZ
*Assistant Professor,
CEMaST & Biological
Sciences*

Assistant Professor Janel Ortiz received the award for her class Environment and Society. The Environment and Society class deals with societal problems related to the availability of natural resources and the decrease in biodiversity. She incorporated ArcGIS in her class which allowed students to look across the U.S and examine redlined areas in major cities.

“The course was fully online. I used a flipped approach with students working on their own on Tuesday and then on Thursday we would go over topics in class. We used a lot of breakout sessions, and polling, and a lot of collaboration on Google slides and docs,” Ortiz said.



X-ray Binaries Reveal Extremes of Physics

X-ray binaries are binary systems where a star and a black hole, or neutron star, are orbiting each other close enough that material from the star is pulled into the black hole or neutron star. This material forms an accretion disk and the rotating material of the disk glows hot and emits X-rays.

“Understanding these objects and how they interact with their environments is really cutting edge - at the forefront of physics research. This is where we can test physics at the extreme and it can only be done studying astrophysical objects. You can’t recreate it in a lab,” said Assistant Professor Breanna Binder.

Binder recalls taking her first astronomy course where her fascination with massive stars began. Her undergrad research led her to use data from the Chandra X-ray observatory. You can think of Chandra as Hubble with X-ray vision. Binder uses both in her research.

Chandra provides information about accretion disks and Hubble allows her to see the companion stars. Hubble provides evidence of the orbital motion of companion stars and the black hole’s mass can be determined by the nature of that orbit.

In 2019 her research team was able to determine the mass of a black hole called NGC 300 X-1. The companion star is a Wolf-Rayet (WR) star about 26 times the size of our sun. They found that the mass of that black hole was 17 times more massive than our sun.

“Despite being 17 times more massive than our Sun, the event horizon of the black hole is only about 100 km (about 60 miles) across.” The event horizon is the black part of the

black hole. “It’s the ‘point of no return’ where gravity is so strong that nothing – not even light – can escape it,” Binder said.

Undergrad Janelle Sy (‘21, physics) co-authored a paper on NGC 300 X-1.

“I developed a passion for astrophysics after taking Observational Astronomy with Dr. Binder. The class exposed me to astrophysics research and taught me how to analyze astronomical data. I fell in love with making new discoveries and it felt extremely rewarding,” said Sy.

That research, conducted at CPP, paved the way for a recent grant from the Space Telescope Science Institute (NASA) to investigate the mass of IC 10 X-1. It is a small galaxy only 2.2 million light-years from us. It’s called the “starburst” galaxy because there’s a lot of star formation happening there. X-1 refers to the X-ray binary being the strongest source of X-rays in that galaxy.

Like NGC 300 X-1, IC 10 X-1 is a (WR) star orbiting a black hole. Those two X-Ray binaries are the only two we’ve detected outside of our galaxy. IC 10 X-1 is believed to be the most massive stellar-mass black hole.

Binder is excited about studying physics in extreme conditions, something that the immense gravity of black holes provides. She points to the study of gravitational waves as especially important.

“Gravitational waves are ripples in space/time that Einstein predicted. But they’re so weak and small that we couldn’t detect them directly until about the last 10 years. The study of gravitational waves will be a Nobel Prize endeavor that revolutionizes our understanding of relativity and these

black hole and neutron systems are the strongest emitters of gravitational waves,” she said.

In addition to her research, Binder also spearheaded the installation of a memorial to women in science in the north hallway that joins buildings eight and three. She saw that in the past sometimes women didn’t get credit for their accomplishments. Sometimes they weren’t allowed to hold positions that would enable them to get credit.

She spoke with Physics and Astronomy Chair Hector

“Understanding these objects and how they interact with their environments is really cutting edge - at the forefront of physics research...”

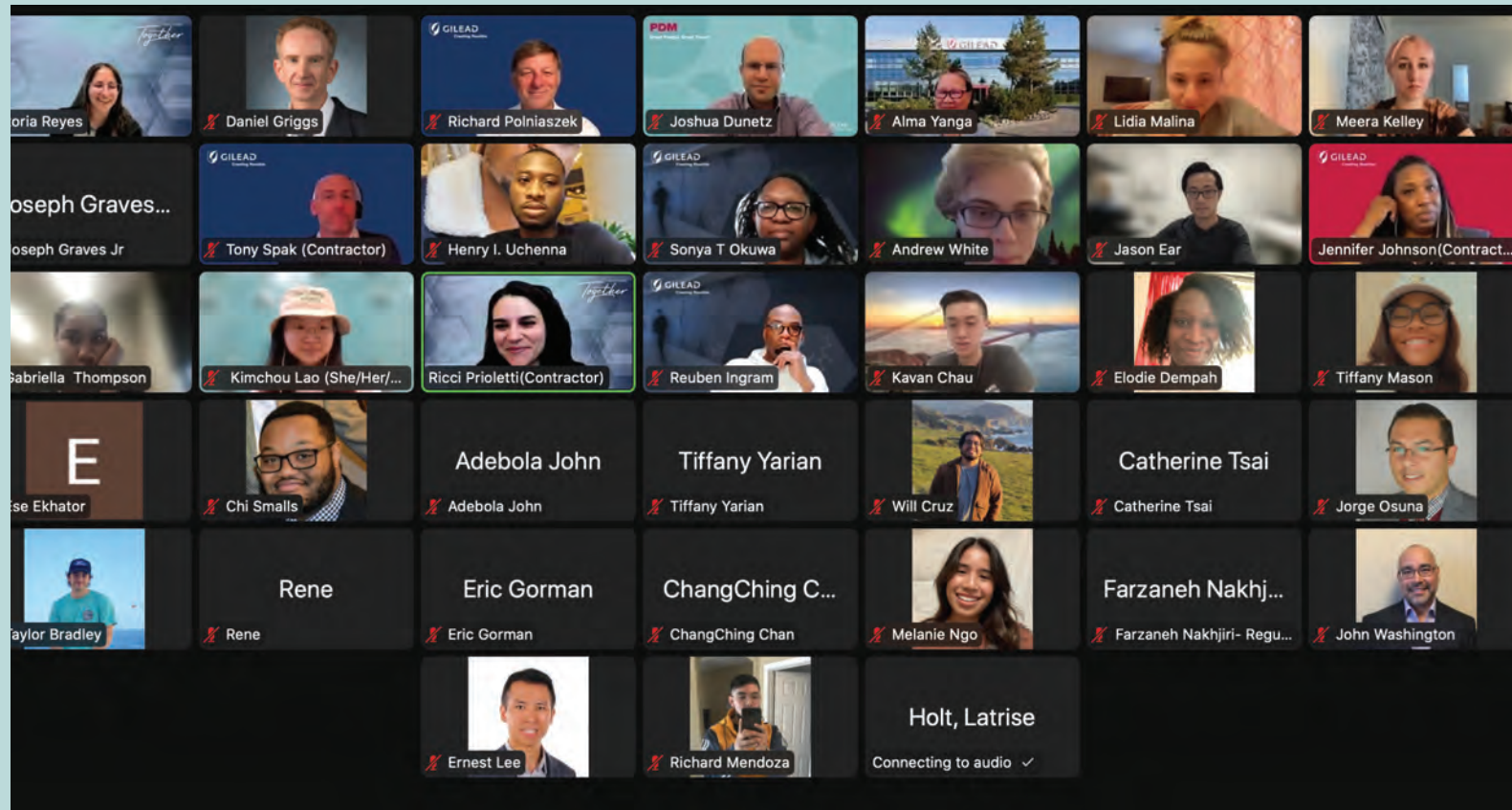
Mireles about her idea and he fully supported it.

The wall includes such notables as astronomer Vera Rubin who discovered dark matter and two-time Nobel Prize winner Marie Curie.

“I wanted to bring awareness to and acknowledge scientists whose names we should know and learn about their accomplishments. I wanted to add to the conversation about who does science,” Binder said.



(L-R) Rosie Nawpar, Breanna Binder, and Homeyra Sadaghiani pose for a photo during the dedication of the hallway commemorating great women of science



Gilead Partnership Provides Opportunities for Underrepresented Students

Cal Poly Pomona and North Carolina Agricultural and Technical State University (N.C. A&T) have partnered with Gilead Sciences, Inc. to help provide students with a career path to the pharmaceutical industry.

The innovative collaboration provides hands-on, learn-by-doing opportunities for students starting with a two-semester virtual class co-taught by Gilead employees. At CPP, the class is called Special Topics for Upper Division Students, BIO-4990.

“Using concepts taught in class, students work in small groups to solve the types of pharmaceutical development problems they might encounter on the job,” said Richard Polniaszek, VP of Process Development at Gilead. The Gilead team meets on a weekly basis to

improve instruction and make it relatable to students.

This partnership shows the commitment Gilead has to developing a diverse workforce. Gilead staff, with already busy schedules, devote their time to providing instruction in process chemistry, formulation, biologics, analytical chemistry, manufacturing, quality, material science, and supply chain. A total of 18 Gilead employees are now involved in teaching the courses.

As a former professor at Duke University, Polniaszek drew on his experience to help with curriculum development. The courses are managed by Jason Ear, biological sciences at CPP, and Joseph Graves, biology at N.C. A&T.

Ear’s research involves generating disease models to better understand the underlying mechanisms of disease. He touts the many benefits of the class. “They’re seeing a lot of things they wouldn’t get in a normal class, such as how industry scales up to meet demand and how global supply chain issues can affect distribution. These are not normally covered in our bio classes. They get real-world scenarios,” Ear said.

Larishia Stanley, who is Gilead’s Director, Early Talent & University Relations, said the program was one of the reasons she chose to come work for the company. “In the past, talent acquisition might focus on employees with 5-7 years’ experience. We want to bring them in earlier,” Stanley said.

Gilead selected N.C. A&T because it’s a historically Black college and university (HBCU) and CPP because it’s an Hispanic serving institution (HSI). The cohort is 25 students at each school, and while the majority of CPP students are biology majors, about 30% are chemistry majors.

A \$1,000 scholarship is available for students who successfully complete the first semester and are enrolled in the second. There are also paid summer internships that run from May to August. This allows students who are pursuing graduate degrees to return to their studies. There’s also a one-year rotational program that culminates in a permanent full-time job. Students choose one of four sites and learn on the job by rotating between two departments.

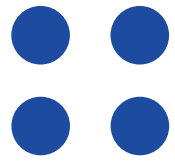
Chemistry major Will Cruz, who plans to earn a Ph.D. in Biomedical Sciences, says the class gave him confidence that there are careers in the pharmaceutical industry for someone like him who is interested in discovering new things.

Kimchou Lao, who is the College of Science’s 2022 McPhee Scholar and Valedictorian said, “I love the interaction with different instructors who share

their experiences. They’ve provided a lot of good advice and guidance on my career path. As a first-generation college student, being able to learn from them is very important.”

Tiffany Yarian said, “I’ve always been interested in the pharmaceutical industry.” Yarian is the Treasurer of the Pre-Pharma Society at CPP. “This class allowed me to ensure that this is the path I want to take. My favorite part is the simulations. I’m very happy I signed up for this course!”

“They’ve provided a lot of good advice and guidance on my career path. As a first-generation college student, being able to learn from them is very important.”



Dean's Circle Connects College of Science to Industry

Advisory boards are a great benefit to colleges. The College of Science Advisory Board is an integral part of the philanthropic efforts that support the college. They also provide an industry perspective, allowing educators to anticipate trends, understand the needs of industry, and better prepare students to enter the workforce.

“Our Dean’s Circle provides a valuable link to the community that benefits both students and the companies that hire them. This is our first advisory group and we’re lucky to have such a variety of expertise to support our mission,” said Dean Baski.

The Dean’s Circle was formed in 2020 during the pandemic. One of the challenges for the College of Science is that the college has seven departments representing seven very different disciplines. The Dean’s Circle started with six members and now has nine. In addition to the members shown here, other original members included Mohammad Virani, President of the Ernest Prete Jr. Foundation, and a supporter of STEM education through the Prete Fellowships, and Jeffrey Eppink ('79, earth sciences) President and founder of Enegis, LLC.

Dean’s Circle members support the college of science with an annual financial commitment and also assist in acquiring funding for science programs and students.

The group hosted career panels for students in fall 2021 and spring 2022, providing valuable information and advice.



Mary Mogge, Chair
Emeritus Physics Professor & former
Department Chair,
Cal Poly Pomona



Richard Lay
Physics, Class of 1989
Program Manager
Jet Propulsion Laboratory



Betty Demus
Microbiology, Class of 1991
Point of Care Coordinator
Adventist Health Tehachapi Valley
US Army (retired)



Niedre Heckman, Past Chair
Chemistry, Class of 1988
Director, Global Regulatory Affairs,
CMC, Devices and Combination
Products Takeda



Renee Jordan
Physics, Class of 1991
Senior Relationship Manager,
Corporate IT
KLA-Tencor Corporation



Dr. Richard Rodriguez
Biology, Class of 1970
Consultant
Retired, VP & Chief Medical
Officer with Carson Tahoe Health



Maria Alvarez
M.S. Computer Science, Class of 1995
GM - AI Platform - Cloud + AI Division
Microsoft



Robert Sterling
Earth Sciences, Class of 1979
Senior Vice President
Confluence Resources



Stacy Pritt
Biology, Class of 1993
Associate Vice President of
Research Support
UT Southwestern Medical Center

ALUMNI MAKE A DIFFERENCE ON GIVING DAY

The College of Science raised \$122,875 from 71 gifts during Giving Day, Cal Poly Pomona's annual fundraising campaign.

Giving Day 2023 is April 19-20. We need Giving Day Ambassadors who are willing to reach out to their networks via email, text messages, and social media to ask for support. We're also looking for matching gifts prior to the event to inspire others to give.

CONTACT INFORMATION:

Bill Burrows
Director of Development
College of Science
bdburrows@cpp.edu
(909) 869-4160

To make a donation please use the enclosed envelope or visit:

give.cpp.edu/science

ALUMNI SHARE THEIR EXPERIENCE WITH STUDENTS DURING PROFESSOR FOR A DAY

In 2022 we returned to in-person alumni career panels. The departments of Biological Sciences and Physics & Astronomy held in-person events while other College of Science departments held virtual ones. Returning alumni provided great information to more than 100 students.

Professor for a Day isn't a day, it's actually a week of events that happens every spring. Alumni who are interested in the College of Science Professor for a Day commit to being part of a one-hour career panel. Alumni respond to moderator questions, and students have the opportunity to ask questions and get career advice.

The 2023 Professor for a Day (week) is March 6-10 (tentative).

For more information:
bit.ly/Sci-PFAD



Mr. and Mrs. Keith Soon Kim cut the ribbon as CPP President Soraya Coley (left) and Dean Alison Baski (far left) look on.

Computer Science Lab Dedicated

A computer science teaching lab was named in honor of Mr. and Mrs. Keith Soon Kim who are generous supporters of the College of Science and Cal Poly Pomona. The lab was dedicated on April 8, 2022. It is used for teaching computer programming.



BASES Covers all Bases



CPP President Soraya Coley (center, front) poses with BASES Scholars and Janetta Dismuke, Director, First Year & Transition Experiences (far left, front) and Dean Alison Baski, Professor Robin Wilson, and Associate Dean Michael Page. (Grouped on right side, back.)

BASES stands for Black Achievement Success and Engagement in Science. The new program is funded by the Kellogg Legacy Project Endowment. Leading the effort is Associate Dean of Students and Operations Michael Page. Page was also President of the Black Faculty and Staff Association at CPP.

“Our goal is to create a learning community in which African American students will belong to a cohort during their first year,” Page said. He says the program grew out of his participation in the College of Science Strategic Leadership Team. One of the goals of the team is to support students by providing high quality curricula and services for a diverse student population.

Previously, Page received an NSF grant that allowed him to work through Science Educational Enhancement Services (SEES) to provide scholarships to students. He led cohorts of students and could see students develop from freshman to graduation. Mentoring, the support of peers, and building a community are some of the elements that make SEES such a successful program. These are elements that are included in BASES.

Even though the BASES program originated in the College of Science, it’s not limited to science students because the cohort is built around general education (GE) courses.

63% of Black/African American students graduate in six years compared to 76% of white students.

While the program recruits scholars from already admitted students, ultimately the program will seek to recruit high school students to attend CPP.

Students who participate receive a scholarship of \$750. Their first semester they take a GE kinesiology course; in 2021 it was taught by Zakkoyya Lewis-Trammell. The course, KIN 2700, covers stress management, healthy relationships, and physical health.

The second semester students take a math course. In 2022 the course was taught by Robin Wilson who has been active in programs like the Algebra Project which strives to provide equity in math education. “Math literacy can be the key to unlocking the unlimited potential of disenfranchised communities,” Wilson said.

Another component of BASES is a co-curricular program to connect the BASES scholars to the larger campus community.

Supporting student success isn’t new to Associate Dean Page. When he was in high school, over summer break, he got to work in a lab at a children’s hospital. Page said, “I saw the real-world value of science. Coming off that internship, I thought, ‘I like science,’ even though I’d never taken a chemistry class. I went back to HS and took a class.” His high school teacher soon had him teaching other students and pushing them to succeed.

Then in college, Page was offered an internship in a lab. “I wanted to work in developing pharmaceuticals but got bit by the teaching bug. It changed my life, wanting to engage in the sciences, and then wanting to get students engaged,” he said.

The \$250,000 in Kellogg Legacy Project Endowment funds provide two years of funding. The BASES program’s success will serve as proof of concept and pave the way to acquire grant funding.

A critical part of the program will be peer mentoring and the funding makes it possible to hire student workers to help implement the program.

Staff can help by offering encouragement, and by recommending the program to students.

Faculty who are interested in getting involved are encouraged to contact Michael Page if your department has a GE course and you’d like to have a cohort of BASES scholars.

At CPP Black/African American students represent 3% of incoming students.



The Cal Poly Universities' Rose Float is Hands-on Teamwork

Biology major Jasmine Ly grew up watching the Rose Parade. Like most of us, she usually watched it on TV but also attended the parade in person with her family a couple of times.

“The opportunity to work on the rose float is very special. Most colleges don’t have one, so it’s unique to the Cal Poly Universities,” Ly said. She seized the opportunity, volunteering to work on the 2020 float, Aquatic Inspirations. Unfortunately, the 2021 Rose Parade was canceled due to the pandemic.

Ly was the decorations lead on the 2022 float, Stargazers. The float depicted the nursery rhyme “Hey Diddle Diddle” and true to the polytechnic philosophy the design combined pastoral elements with high tech. The cow jumped over the moon with the help of a jet pack.

The Cal Poly Universities’ 2022 Rose Parade float, Stargazers, won the Animation Award. It is the 61st award for the student teams.

Ly managed and helped other volunteers. She said she gained valuable experience in teamwork. “We work with

our hands and we work as a team. There’s a lot of team bonding. It’s a great experience to get hands-on skills. We have volunteers in design, construction, and decoration. You get to work with other majors too such as engineers.”



As the end of the year draws near the pace of work picks up. Last year Ly worked Saturday and Sunday at the lab. She processed static which was grown here at CPP. They also processed rice powder, blended rice grains, and onion seed powder.

Student volunteers get a one weekend break during finals. The last week in December is decoration week and the teams work daily, often from early morning till late at night. There are volunteer opportunities for that week. People interested in volunteering to decorate the last week of the year should visit: <https://www.rosefloat.org/this-year-1>

More than 80 students worked on the 2022 float and were able to do so in the new \$5.5 million Rose Float Lab and Design Complex. The lab, which provides 14,000 square feet of indoor and outdoor workspace, was completed in 2021 and dedicated in May, 2022.



Some interesting facts about the Cal Polys' participation in the Rose Parade:

- The only student-built and designed float constructed year-round by multiple campuses
- Participated every year since 1949
- First Cal Poly Float was a Rocking Horse
- Won 61 awards in 73 years

True to their polytechnic nature the universities are responsible for these technological innovations:

- Animation using hydraulics, 1968
- Animation controlled by computer, 1978
- Use of fiber optics, 1982





Three Projects the College of Science is Leading:

Remote Sensing for Habitat Restoration

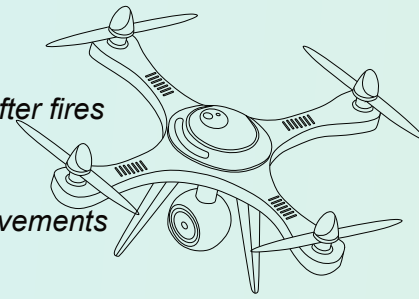
Enables the collection of plant, temperature, and terrain data that will guide restoration after fires

Geohazards Analysis

Allows the creation of 3D maps of terrain and the ability to see subsurface faults and movements

Communication Systems for Emergency Networks and Cybersecurity

This research will provide first-responders with techniques to launch 5G airborne communication networks when disasters affect infrastructure. Cybersecurity research will focus on the detection and mitigation of harmful UAV's such as unauthorized drones flying in disaster response airspace.



Advanced sensors that cost up to \$250,000 make it possible to acquire accurate and incredibly detailed data.

EDUCATIONAL PARTNERSHIP TAKES COLLABORATION TO NEW HEIGHTS

Since 2005, Cal Poly Pomona's Educational Partnership Agreement (EPA) with the Air Force Research Lab (AFRL) has enhanced the educational experience of our students by providing exceptional hands-on learning opportunities.

CPP received \$4.85 million for FY21 that is funding seven projects involving 17 faculty from nine departments across five colleges. This innovative multidisciplinary collaboration is providing enormous opportunities to students. They will use state of the art unmanned aerial and ground vehicles (UAV & UGV) equipped with advanced sensors. Alison Baski who is College of Science Dean and Interim College of Engineering Dean is the Principal Investigator on the CPP grant.

Thanks to efforts by Rep. Norma Torres (D-35), Rep. Grace Napolitano (D-32), and Rep. Salud Carbajal (D-24), Cal Poly Pomona, in partnership with Cal Poly San Luis Obispo, has received funding for our campus to advance our EPA with the AFRL for multi-disciplinary projects involving faculty from colleges across the institution. Through this transformative funding, our students have access to state-of-the-art equipment, conduct leading edge research, and gain experience that prepares them to meet challenges and become leaders in the workplace.

CPP COLLEGES - DEPARTMENTS

Science – Computer Science, Biological Sciences, Geological Sciences
 Engineering – Aerospace, Electrical and Computer, Civil
 Agriculture – Plant Science
 Business – Computer Information Systems
 Letters, Arts & Social Sciences - Geography



LiDAR

Light Detection and Ranging

Laser pulses are used to measure terrain, allowing scientists to create 3D maps of surface features and vegetation. This data will be used by geologists for geohazard research and biologists for habitat monitoring and restoration.

Projects will use UAV's & UGV's equipped with Hyperspectral, LiDAR, air quality, and thermal sensors, as well as digital RGB cameras.



Hyperspectral



UAV mounted hyperspectral sensors allow researchers to identify the chemical composition of materials. Geologists will be able to determine the mineral composition of terrain and the presence of water. Biologists and plant scientists will be able to identify different plant species and even determine the health of those plants.

COLLEGE OF SCIENCE

UNDERGRADS
4,263

GRADUATE STUDENTS
305

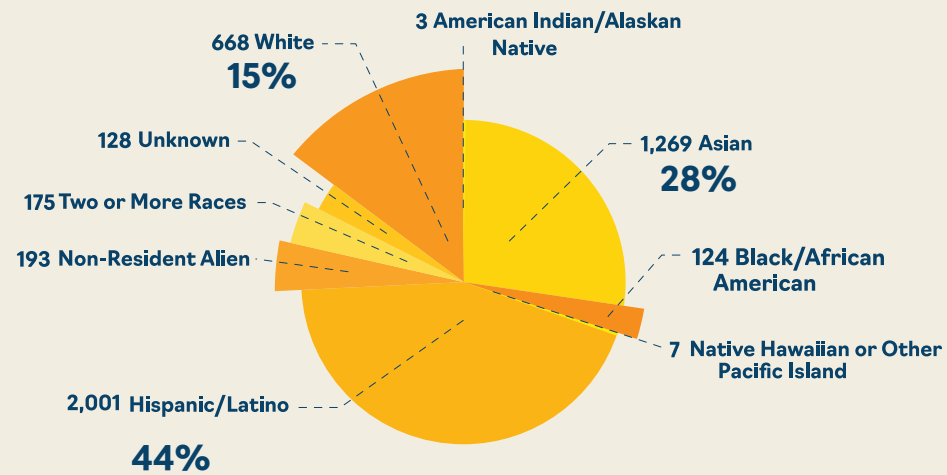
UNDERREPRESENTED MINORITIES (URM)



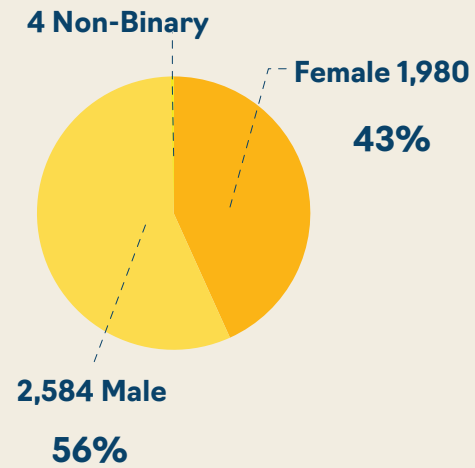
FIRST GENERATION COLLEGE / DEGREE



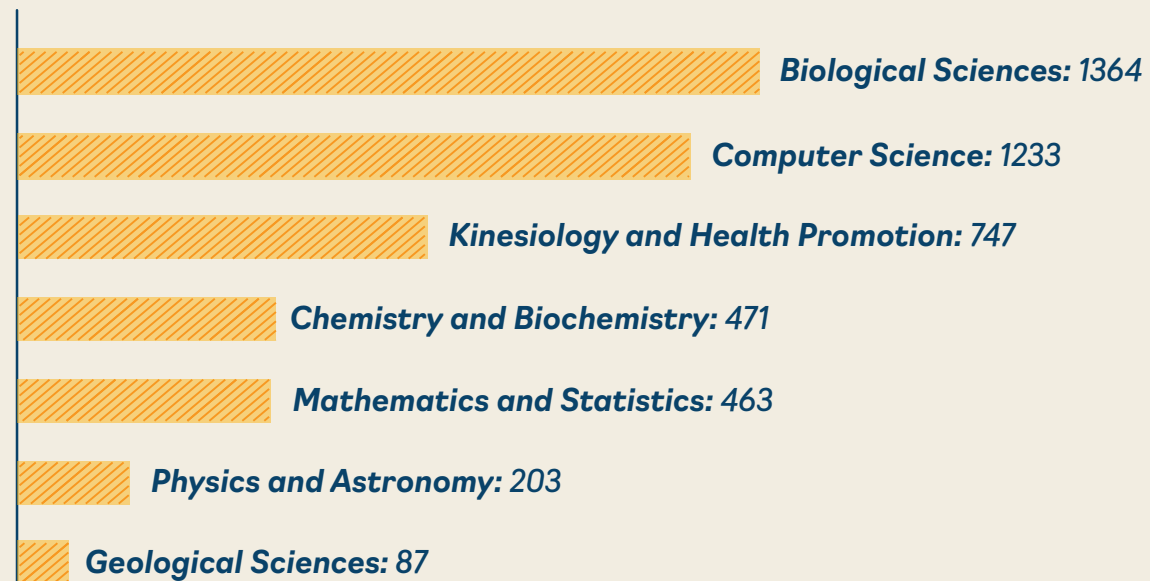
ETHNICITY



GENDER



ENROLLMENT BY DEPARTMENT



TOTAL
4,568

Based on fall 2021 data

COLLEGE OF SCIENCE CLASS OF 2022

Commencement Ceremonies for the College of Science were held on May 22, 2022. The seven departments were spread across two ceremonies. You can view recordings of them at bit.ly/Cpp-Stream



900 graduates
826 bachelors
74 masters



BIOLOGY MAJOR DIANA AGUILAR-CRUZ APPOINTED TO THE CSU BOARD OF TRUSTEES

The email inviting her to apply to the CSU Board of Trustees came as a surprise to Diana Aguilar-Cruz, now in her 3rd year at CPP. She was nominated to apply and interviewed with the Cal State Student Association and the Governor's office.

On June 1 Governor Gavin Newsom appointed her to the 25-member Board of Trustees and her two-year term began July 1. She will represent the 477,000 students in the CSU system that spans 23 campuses.

Aguilar-Cruz is passionate about ensuring that students' basic needs are met. "Housing and food insecurity are important issues. Students shouldn't worry about where they're going to live or have to choose between buying a textbook or buying food. At CPP students have told me how important the Poly Pantry has been to them."

Aguilar-Cruz chose CPP because she felt comfortable and welcome. "I also love the learn by doing motto. You can't learn science if you're not doing it," she said. "I also want all students in the CSU system to feel that they belong. Everyone should feel safe, welcome and accepted. There are a lot of student centers on campuses where students can go to feel welcome and accepted. That feeling should extend across the entire campus."

She plans to go to medical school to become a pediatric neurosurgeon and also wants to earn a Ph.D. in organic chemistry. A challenging goal inspired by chemistry Professor Alex John. "He taught me to trust myself," she said. "I gained confidence that if I could do this, I could do anything."

Aguilar-Cruz was born in Mexico and came to the U.S. when she was fourteen. She's wanted to be a doctor since she was four. Her late grandmother, Yolanda, encouraged her to play teacher but that didn't interest her, lab coats and stethoscopes did, so her grandmother obliged. Toys wouldn't suffice though, she soon wanted a real stethoscope and to learn how to use it, which she did.

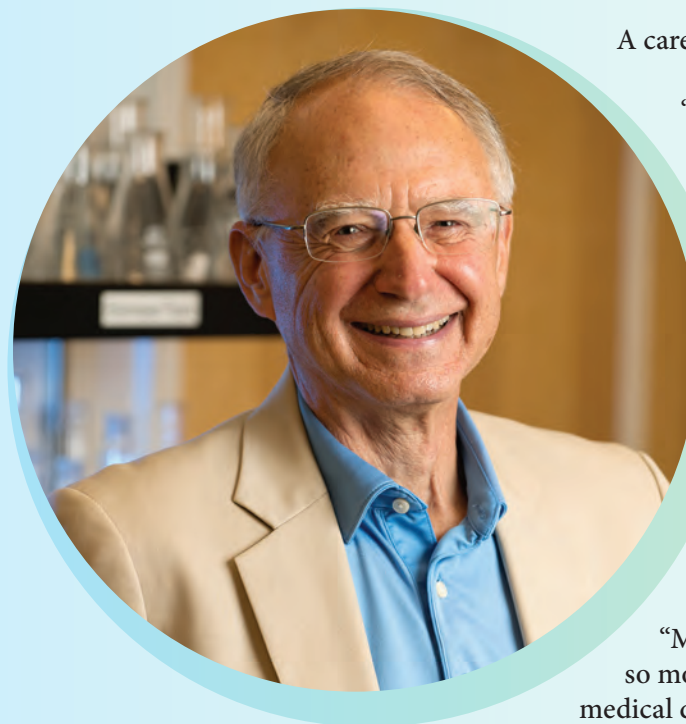
Earning two doctorate degrees may seem excessive but Aguilar-Cruz is accustomed to doing more than expected. In addition to her studies, she conducts research in Alzheimer's disease with Professor Kageyama and research



on gestational diabetes for the Insan Foundation. She was also a member of the Achieve Scholars Program and the Mexican-American Student Association.

Aguilar-Cruz wants to be a role model to her cousins and her 13-year-old brother Alejandro, who is interested in engineering. "I want my family and other Latinas to see what's possible. Becoming a doctor will also allow me to serve others and give back. I want to be able to provide medical services to people who are underserved."

2022 DISTINGUISHED ALUMNUS MARIO SORCI



A career in science seemed inevitable for Mario Sorci ('71, chemistry).

"As a child, I always wondered how things were made," he says. "And if I could borrow my dad's tools, I would try to build things."

He was a transfer student to Cal Poly Pomona from a junior college.

"I needed an affordable school that was nearby with a good science department," Sorci says. "I was working full-time at a chemical company to pay for college, so having Cal Poly Pomona in my backyard was great."

His interest turned to chemistry, and to a student, Karen Dundas ('71, biology), who would become his wife and business partner. Her father, chemist and medical equipment designer George Dundas, was a role model.

"My father-in-law worked on the alkaloid curare to extract a pure form so modern anesthesia was possible," Sorci says. "He then went on to design medical devices."

Studying at Cal Poly Pomona was an eye-opening experience for Sorci.

"Dr. Arnulf Vollmar changed the way I began to look at everything when he emphasized in an organic chemistry class that it was not good enough to just make something, you had to be able to make a profit."

After graduation in 1971, Sorci worked for a small medical company in Vancouver, British Columbia until 1973, when he moved to the Seattle area and soon founded Anesthesia Equipment Supply. In 1984, after the death of his father-in-law, he also became director of research and development for G. Dundas Co Inc., a small innovative medical company.

He remembers difficulties he had as a college student. "I really liked my chemistry classes, but struggled with the humanities," he says. "I didn't like classes where I couldn't find a real solution." He pledged to help others get their education and has provided an endowed scholarship for deserving science students.

Sorci and his wife have two children, who now manage his two companies. He is mostly retired, but at times tackles projects for his former company.

"I just accept what comes and try to make things better whenever possible," he says. "I am still passionate about collaborating with people to improve their products and, of course, education."

Cal Poly Pomona science students benefit from support provided by the Mario Sorci Endowed Scholarship for Chemistry, and the Karen Dundas Sorci Endowed Scholarship for Biology.

The Distinguished Alumni Award is presented by the Cal Poly Pomona Alumni Association to honor outstanding achievement in a profession or a vocation, service to a local, national, or global community, or service to Cal Poly Pomona.

SCIENCE ON TAP



Science on Tap is a place for the public to come to explore the latest ideas in science and technology.

The College of Science hosts two Science on Tap events each semester. The events are held on Monday night from 7-8 p.m. In-person events are held at Innovation Brew Works, providing an opportunity for people to order refreshments and discuss the topics that are presented.

The event co-chairs are Associate Professors Douglas Durrant, Department of Biological Sciences, and Kathryn McCulloch, Department of Chemistry and Biochemistry.

Past presentations have included CPP experts discussing such diverse topics as machine learning, vaccines, and restoring California ecosystems after wildfires.

Check the Science on Tap page under “events” on the cpp.edu/sci website for dates and topics.



2023 SCIENCE RESEARCH SYMPOSIUM

Join us to see our undergraduate and graduate student research projects.

Friday, April 28, 2023 (tentative)



Alumni who attended the 2022 Science Research Symposium were treated to lunch and a tour of the College of Science.

Bronco Mentoring Program

CPP Alumni:

With just a little bit of your time, you can give students the confidence to go after the career they want.

You're invited to join the CPP Bronco Mentoring Network, our career-mentoring and advice-sharing network that makes it easy for you to connect with others in the Cal Poly Pomona community. The goal of the program is to increase student success by connecting students with alumni who have expertise in their industry, major, or future career.

**Sign up to become
a mentor today!**



**Current students
can sign up here:**



cpp_science



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