

About Maximizing Engineering Potential (MEP)

Maximizing Engineering Potential (MEP) is an academic enrichment program housed within the Center for Gender, Diversity & Student Excellence in the College of Engineering at Cal Poly Pomona. MEP serves students who are interested in a cohort-based learning community. To be fully inclusive and open, MEP also offers an “MEP Affiliates” program, which is open to all engineering students who may want access to some academic enrichment services but do not want to participate fully. MEP endeavors to support all students who seek help. MEP programming is designed to develop students (both first time freshmen and transfer students) into higher-achieving students so that they go on to become more desirable graduates. The MEP program has several components; some are focused on the “first-year experience” (FYE)—to help ease the transition of high-school (or community college) to university—while others are focused on the needs of adult returning students.



- **Women are Gendered Minorities in Engineering:** While MEP focuses primarily on supporting historically under-represented minorities, low-income (Pell-eligible), and first-generation students (see Figure 1), it also support women. Prior to 2014, only ethnically under-represented women were served by MEP. With women comprising about 10% of professional engineers, MEP considers women ‘gendered minorities.’ Women engineering students now comprise 55% of MEP students.

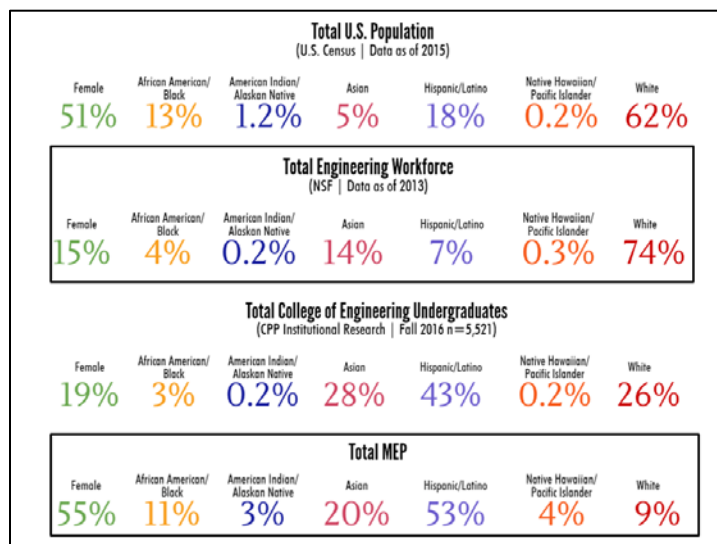


Figure 1. MEP demographic as compared to CPP Engineering, Engineering Workforce, U.S. pop.

- A Comprehensive College-based Program with Cradle-to-Career Goals:** MEP provides academic support/ enrichment and intervention, a summer residential program (“Engineering in Your Future”), set-aside sections in first-year orientation courses, peer mentoring, corporate mentoring (using the ‘pyramid mentoring approach’), industry-engagement workshops, soft-skills workshops, tutoring, supplemental instruction, professional development activities, scholarships/internships, and industry-focused events, including field-trips. MEP also offers a separate learning community for students who interested in pursuing post-baccalaureate studies (i.e., Masters/PhD programs); MEP partners with Purdue for a post-baccalaureate pipeline program called “Pathways to the Faculty.” While all of these activities are aimed at increasing student exposure to engineering industry and widening the range of engineering career pathways and future-of-work opportunities for MEP students, MEP also actively participates and supports K-12 outreach via four cultural affinity student organizations: American Indian Science and Engineering Society (AISES), National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), and Society of Women Engineers (SWE). MEP regularly participates in, facilitates, sponsors/supports a number of K-12 outreach programs. Some examples include: “Engineering Girls–It Takes a Village” supports young girls/mothers who reside in transitional housing and homeless shelters (partnering with SWE); “Reach” Day with Compton Unified School District (partnering with NSBE), Annual Native American College Exploration Day via Inter-Tribal Education Collaborative (partnering with AISES).
- Supporting Community College Transfer Students:** MEP has traditionally served first-time freshmen (cohorts 1982–2013). Recognizing that many low-income high school students head to two-year community colleges, as opposed to four-year institutions, MEP also actively recruits community college transfer students. MEP receives recommendation for transfer students from 12 California Community Colleges, mainly via the MESA Program or STEM/SRI: Cabrillo College, Chaffey College, Citrus College, College of the Canyons, El Camino College, Irvine Valley College, Mount San Antonio College, Pasadena City College, Saddleback College, San Bernardino Valley College, Santa Ana College, and Santa Monica College. The MEP Director is currently strengthening ties with these two-year institutions and several others via her affiliation with the American Society for Engineering Education Pacific South West and the Engineering Liaison Council. MEP admitted the first-ever cohort of community college transfer students; it plans to admit 50–75 engineering transfer students each Fall term.
- Partnering with Student Affairs (“Male Success Alliance”):** Endeavoring to increase the headcount of African American/Black and Hispanic males—who comprise the most under-represented population in engineering—MEP is in the process of developing a partnership with the “Male Success Alliance” office at California State University, Dominguez Hills. A preliminary plan proposes to have CSUDH students complete a pre-engineering program and transfer to Cal Poly Pomona College of Engineering; it is anticipated that many of these students would pursue technology-based programs.
- “Paying it Forward” – Giving Back to the Community:** Recognizing the linkages between poverty and opportunity, Habitat for Humanity is an organization that many MEP students participate in. The Cal Poly Pomona Habitat for Humanity student chapter was chartered through Lily Gossage, MEP Director. Having served in the Peace Corps, Lily Gossage, MEP Director, promotes the value of ‘paying it forward’ to all students. MEP connects annually with the regional

Peace Corps office (El Segundo, CA); and each year, a returned Peace Corps volunteer is invited to deliver a presentation to MEP students. Currently, one Civil Engineering student has plans to work with a water reclamation government agency in Peru via the Peace Corps; her term of service will begin in May 2019.

- **Social Mobility ("Manuel's Story"):** Given that MEP serves first-generation low-income students who pursue engineering (considered among the highest-paying career fields), MEP is poised to become the exemplar program for increasing social mobility for students from under-resourced communities. MEP was referenced in an article announcing that Cal Poly Pomona was named as the [2018 "Social Mobility Innovator"](#) of the year by CollegeNet, Inc. Overcoming the odds, many low-income students who participate in MEP and pursue a career in engineering, are able to lift themselves, their families, and their community. **Manuel Beltran:** An example of overcoming the odds is seen in the compelling story of Manuel Beltran (Associate Tech Fellow, The Boeing Company). At the age of 12, Manuel Beltran joined a gang, experimented with drugs; at age 16, he was in juvenile hall. After transferring to Cal Poly Pomona, Manuel Beltran was admitted to the MEP Program; he graduated with a B.S. in Aerospace Engineering in 1989. In a recent keynote speech he delivered to prospective MEP students (during the 2018 "Engineering Scholars Day"), he shared his remarks: *"Following a major gang altercation, I felt I was given a second chance on life. I was handed a clean slate and was determined not to be limited by my poor choice of the past. I made a commitment to serve and pay back for the rest of my life."*

Manuel Beltran
Associate Tech Fellow
The Boeing Company



Manuel Beltran is a distinguished Associate Tech Fellow and Chief Software Architect for Boeing Avionics. His career spans nearly 30 years of working with cutting edge technologies across a wide range of aerospace programs in space vehicles, military ground vehicles, robotics, high energy lasers, fighter jets, and commercial airplanes.

As a Boeing Tech Fellow, Inventor, and Boeing Designated Expert in Embedded Systems, Software Architecture, and Network Technology, Manuel is frequently called on to solve some of Boeing's biggest challenges. From applying Artificial Intelligence for Space Shuttle launch processing to integrating robots on the factory floor of the new 777X, Manuel has been involved with some of the coolest projects in history. Besides his patents in space based defense systems, Manuel invented the first all-digital InFlight Entertainment System, and has patents on portable media devices predating the iPhone.

Manuel graduated with a B.S. in Aerospace Engineering in 1989 with a Minor in Computer Science from Cal Poly Pomona. While at Cal Poly Pomona, he was part of the MEP program.

“Learning Community & Pre-Orientation” and “Engineering In Your Future”

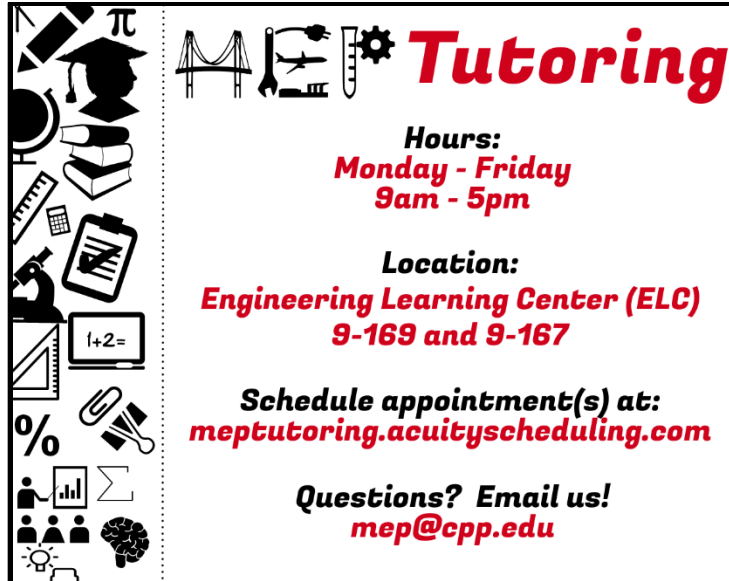
Incoming MEP students (both freshman and transfers) are supported during the summer before the Fall term through MEP’s “Learning Community & Pre-Orientation” event and “Engineering In Your Future” (EIYF) summer residential program. Pre-Orientation is held at the beginning of summer to provide an overview of the MEP program, introduce the standards, policies, program requirements, and networking opportunities (“study buddy”) with other cohort members. Students familiarize themselves with the layout of campus, learn about the registration process, and build their tentative class schedules. Incoming cohort students return towards the end of summer for EIYF, a 3 day over-night stay program. Students engage with other members of the MEP cohort, are introduced to their peer mentors, and engage in a series of workshops by both professional staff and engineering industry representatives. These activities are designed to introduce students to various engineering fields, team-building, and community-engagement opportunities. MEP is designed to guide students’ expectations as they complete their transition from high school or community college and embark on their college experience.



Figure 2. MEP “Engineering In Your Future” summer residential program.

MEP Tutoring

MEP runs the MEP Tutoring Program, which is open to all College of Engineering students. This peer tutoring service offers tutoring for all levels of courses, 200-, 300-, and 400-level classes (freshman- to senior-year). It is recognized by MEP that students who have a greater grasp of their foundational math classes tend to do better in their future engineering core requirements. For incoming freshmen, students are required to accrue a minimum of 2 hours per week of tutoring. This standard is designed to build good study habits, increase time-on-task, and develop a culture of studying as a means to improved academic success.



Hours:
Monday - Friday
9am - 5pm

Location:
Engineering Learning Center (ELC)
9-169 and 9-167

Schedule appointment(s) at:
meptutoring.acuityscheduling.com

Questions? Email us!
mep@cpp.edu

MEP Supplemental Instruction Program

Supplemental Instruction (SI) is an MEP-led program that serves all students in the College of Engineering. SI targets those classes (primarily upper division level) that have been identified through historical data as having a low completion rate. Due to low completion rates, it creates a bottleneck for students who need those classes in order to move through the course sequence or to graduate. These bottleneck courses tend to create a constant source of frustration among students who are unable to persist in order to graduate on a timely basis. Time-to-degree is important; and few interventions are able to be implemented on a large scale. As an innovative approach to address the issue the “scaling up” challenge, the MEP Director—in collaboration with the Chair of the Mechanical Engineering Department—developed the “Technology-Assisted Supplemental Instruction” (TASI) program; this approach uses technology to be able to offer SI to all sections of selected high-DUF courses. In Spring 2018, TASI will be offered for all 7 engineering departments. TASI sessions are peer-led by former students who have identified by faculty coordinators as having mastery of the course curriculum. Below are the engineering courses that have been identified for TASI intervention:

1. Aerospace Engineering: ARO326, ARO327
2. Chemical Engineering: CHE311, CHE312, CHE313
3. Civil Engineering: CE304, CE305
4. Electrical & Computer Engineering: ECE207, ECE231, ECE425
5. Engineering Technology: ETT220, ETT211
6. Industrial & Manufacturing Engineering: MFE201
7. Mechanical Engineering: ME214, ME215, ME218, ME301

Our Tutors & Supplemental Instruction Facilitators



Daniela Andalon



Connor Carr



Fernando Villanueva



Josh Pham



Katherine Nava



Brent Wilder



Jacob Benoun



Patrick Behr



Dylan Reyes



Joel Haro



Madison Hunter

MEP Participation and Academic Excellence (straight A's, and A's in Calculus)

MEP facilitates a culture of excellence and a "can do" attitude by recognizing and acknowledging individuals each quarter who attain "straight A's," attain an "A" grade in their "Calculus-and-Above" math class, or who have accrued a high number of participation points in MEP activities. Students are recognized through promotional materials distributed by MEP, posted on MEP controlled social media, and posted on MEP controlled digital signs in the engineering building.

ACADEMIC EXCELLENCE

Students with A's in Calculus I, II, III, or Differential Equations

Dawood Amin
Nikolas Aquino
Joshua Bloomer
Eloy Rangel
Timothy Heng
Ega Herlim
Keiga Ishibashi
Dhanush Karthikeyan
Matthew Kuykendall
Allan Samuel Lasat
Karina Martinez
Pengdwende Nikiema
Christine Nonobe
Patrick Quach
David Rodriguez
Karen Ronquillo
Joshua Sycip
Salma Bustos
Florentino Villegas

MEP recognizes that having strong mathematical skills sets the stage for academic excellence in engineering.

909-869-2482
mep@cpp.edu
Bldg. 9, Rm 153

COLLEGE OF ENGINEERING
CAL POLY POMONA

Congratulations TO OUR STRAIGHT A STUDENTS

Salma Bustos
Keiga Ishibashi
Reina Villalobos
Jonathan Nguyen
Joah Siganoney
Patrick Quach
Nayeli Ruiz
Matthew Kuykendall
Krisha Grace Vallejos
Nikolas Aquino
Timothy Heng
Ega Herlim
Janet Marie Hernandez
David Rodriguez
Saul Pedrosa
Ricardo Gonzalez
Emiliano Ibanez
Pengdwende Nikiema
Kerry Escamilla
Joshua Bloomer

STUDENTS WHO RECEIVED AN A IN CALCULUS OR HIGHER

Dawood Amin
Nikolas Aquino
Joshua Bloomer
Eloy Rangel
Timothy Heng

Ega Herlim
Keiga Ishibashi
Dhanush Karthikeyan
Matthew Kuykendall
Allan Samuel Lasat

Karina Martinez
Yume Nonobe
Patrick Quach
David Rodriguez
Karen Ronquillo

Joshua Sycip
Salma Bustos
Martin Del Campo
Florentino Villegas
Nikiema Pengdwende

MEP U-Hour Workshops

U-Hour workshops are held every Tuesday and Thursday of each week. These are held during U-Hour (12:00pm-12:50p), a time during which no classes are scheduled by the university. This allows students the flexibility to participate in clubs, supplemental instruction, social activities, student government, and other extracurricular activities. MEP takes advantage of this time to host U-Hour workshops. These are personal and professional development workshops, and MEP invites representatives and engineers from industry to present to the students on a variety of topics. Some topics include information about company culture, the type of engineers they are looking for, the work projects, as well as resume and career help, academic preparation, and leadership development.




Post-baccalaureate Studies Support

MEP actively identifies and supports students who may be interested in research or a research career, and who may be interested in pursuing a graduate degree. MEP connects with research institutions such as Purdue University, UC Berkeley, UC Irvine, Rensselaer Polytechnic Institute, and MIT Lincoln Lab, and invites speakers to present on a variety of topics related to graduate school and research. Students learn about how to prepare for graduate school, where to seek funding, how to pay for graduate school, networking with faculty, and areas of research. MEP also supports staff chaperoned campus visits to other universities, to explore their graduate programs and labs. MEP identifies eligible students to participate in these campus visitations, such as the annual Purdue University "Early Pathways" program, where 4 sophomore and junior level students are selected and invited to visit the campus.






Purdue University Research Program

Experience
and "How to Get Summer Internships"




Presented by Hernan Lopez
Thurs Feb 8 | 1200p-1250p
Room 9-151

Hernan Lopez, MEP Mechanical Engineering student, who went to Purdue University to participate in the "Early Pathways - Pathways to the Faculty" program in 2017. He also participated in the Summer research program "SURF" which allow STEM students to explore, discover, and transform ideas into reality to advance society and improve people's lives.

(909) 869-2482 <http://www.cpe.edu/engineering/MEP> @MEP MEP@cpe.edu <http://cpe.mep.purdue.edu>

<https://goo.gl/XeXwra> MEP



From left to right: Ashley Bell (Civil), Dastaja Coleman (EE),
Brendan Lianoz (EE), and Hernan Lopez (ME)

Our students are off to visit **PURDUE** UNIVERSITY

for the Early Pathways Event

The Pathways to the Faculty program was designed to encourage underrepresented students in engineering to pursue Ph.D. study and a faculty career. Our students will be attending the Early Pathways event which informs students what it takes to be a faculty member, and begin their preparation to be admitted into graduate school.

If you're interested in pursuing a post-baccalaureate pathway visit the MEP Office in 9-153.

Cultural Affinity Groups

As part of its diversity focus, MEP houses and supports the engineering cultural affinity groups: **AISES** (American Indian Science and Engineering Society); **NSBE** (National Society of Black Engineers); **SHPE** (Society of Hispanic Professional Engineers), and **SWE** (Society of Women Engineers). MEP provides supplemental coaching resources, leadership training (including a four-hour ropes course), budget and administrative support to each of the group's Executive Board. MEP collaborates with each group for their initiatives. This support complements the primary guidance given by each of the group's respective faculty/staff advisor(s).

Maximizing Engineering Potential (MEP)

Our Cultural Affinity Student Leaders



Garrett Granados
AISES President



Jego Santos
SWE President



Damian Magana
SHPE President



Nahusenaye Abebe
NSBE President



MEP Peer Mentoring and MEP Ambassadors

MEP has additional strategies to build teamwork, community, and value among MEP students. MEP Peer Mentoring strives to connect return students 2nd year and beyond with incoming freshman and incoming transfer students of similar backgrounds and interests. To facilitate connections, MEP hosts multiple "Mentor & Mentee" (M&M) events per quarter, where mentors come out with their mentees and network and participate in ice-breakers. M&M events also facilitate community and builds relationships between MEP students, who sometimes, for a variety of reasons, may not have the opportunity to get to know each other outside of classes. MEP Ambassadors are selected through an application process, and are student volunteers. Ambassadors act as the outward student face of MEP and participate at a variety of speaking and public events, ranging from sitting on student panels or staffing booths at campus resource fairs to formal presentations to parents on both MEP and their engineering projects.



Student Advising and Coaching

MEP tracks the attendance patterns of first-year students in the categories of tutoring, workshops, volunteerism, and attendance of milestone events. MEP actively follows up with students who do not meet their quarterly MEP requirements. MEP believes that proactive monitoring of this type reinforces in the students that the accumulation and development of the right habits, soft skills, and leadership skills will directly impact their academic success during their years on campus, as well as influence their preparedness for the work force after when they graduate. MEP uses an 'early identification and monitored success' approach to keep students on-track toward time-to-degree. This level of intrusive advising, blended with as-needed coaching, has shown great promise. MEP has a 100% retention rate in years 1 and 2. MEP is currently developing a "MEP Faculty Ambassadors" for a cultural relevant pedagogy project.

MEP: The "Home Away from Home" Approach: Proactive monitoring allows opportunities for intervention, especially when comparing the student's data from one quarter to the next. Sudden changes in patterns can be indicative of a student wishing to pursue a different major, or it can be indicative of a student's family, social, and work pressures outside of school. This allows the possibilities of intervention and gives MEP the chance to assist and guide the student, or to give a referral to the appropriate student service for further support. MEP staff offices are also designed to be open spaces to allow students to feel comfortable in visiting. Students regularly come by MEP offices to say 'hello' and visit, or use it briefly as a staging area before their next class. All of these are opportunities to build a relationship with the student and give them another avenue to be connected to campus. MEP strives to provide a sense of "home away from home," provide a warm community, and be a place where staff is actively rooting for their success.

MEP: Anywhere, Anytime: MEP recognizes the peer-centric nature of Millennials and relies heavily on social media to connect with students. MEP has an active FaceBook (<https://www.facebook.com/cppmep>) and Instagram (<https://www.instagram.com/cppmep/>). MEP uses SnapChat to register students for U-Hour workshops. To quickly connect with students, MEP also uses a Text-messaging application.

