

CalPolyPomona

College of Engineering
Industrial and Manufacturing Engineering



Academic Year 2021-2022 Newsletter

Greeting from the Department Chair



Greetings from the new Chair of the IME department! I am excited to share good news regarding the department during the Spring semester of 2022. For the first time, the IME department has secured a position for an Associate Chair, and Dr. Saeideh Fallahfani has been appointed for this important role. Following the IME department's strategic planning effort, she will be spearheading the strategic doing effort in the department, among other important responsibilities. As a part of the strategic doing effort, we are planning to define actions that help us to improve course scheduling, strengthen relationships among students and faculty, and improve communication and transparency.

As the department's new Chair, my vision for the manufacturing program is to enhance the program to the state of the art by modernizing the labs and improving the course content. Recent statistics show an increasing trend towards advanced manufacturing hiring in the job market; as one of the few programs in the field, we are well-positioned to tap into this opportunity and become "the place" where manufacturing engineers are trained. For the industrial engineering program, we continue to enhance the program by upgrading the course content and including software aligned with the latest trends and technologies demanded from our graduates in the field.

To realize this ambitious plan, we have been working to rebuild our industry connections and secure donations during the spring semester. With generous donations from our alumni and industry partners, our automation lab is undergoing a major overhaul. Additionally, committees within the department are actively working on including leadership modules in our curriculum, improving and standardizing course contents. All these efforts are happening just in time for the upcoming ABET visit in Fall 2023!

As we all know, the Spring semester didn't start as we had hoped and planned. Due to the surge of the COVID-19 cases in the area, we had to resort back to the virtual mode of instruction for the first three weeks of the semester. However, as of Feb 14th, we are back in-person, and in our department, 95% of the classes are being conducted in-person. With the return of in-person instructions, student and faculty travel can once more become a possibility. Our faculty and students have been able to attend conferences and student competitions and rank highly among their peers. I

am grateful that despite the interruptions caused by the pandemic at the beginning of the semester, our faculty, students, and staff have been patient, flexible, resilient and have worked hard not just to weather these changes, but to thrive.

Shokoufeh Mirzaei
IME Department Chair

Graduate Program Growth



The **M.S. in Systems Engineering** at Cal Poly Pomona was launched in Fall 2015 with less than 10 students and has grown to more than 50 students, from various engineering backgrounds, in Spring 2022. Graduates have been hired by corporations in aerospace industries, defense contractors, commercial manufacturers, utility and communication companies, in addition to healthcare. The program is currently offered in a hybrid format which is a blend of online and in-person instructions. Systems Engineering is an interdisciplinary field of study that focuses on how to design, develop, lead, implement and evaluate complex systems.

Tim and Vy Li's Generous Donation



Tim and Vy Li have been generous with their \$120,000 donation to the Industrial and Manufacturing Engineering department. Vy (standing in the middle in the photo) is sharing her inspiring journey and motivations behind their philanthropic activities:

Tim and myself (Vy Li) together we share similar views on engineering and therefore have become Industrial Engineers for life. We both received our Bachelor's degrees in Industrial and Systems Engineering at SJSU (San Jose State University) in 2003. Tim continued on and pursued a Master's degree in Operations Research at USC (University of Southern California) in 2004, and I recently completed my Master's degree in Systems Engineering at CPP (Cal Poly Pomona) in 2021. In 2016, we started our own business and founded Constellation FinTech. Constellation FinTech is an end-to-end lending company that provides a lending software platform, AI (Artificial Intelligence), data analytics, and operational services provider for financial services.

My parents and I escaped Vietnam's Communism by boat in 1981 as Vietnamese refugee survivors and immigrants. We survived the dark horrors at various places

such as at sea as well as the Pulau Bidong's refugee camp in Malaysia. My family was very fortunate and lucky given that we were picked by lottery to go to Canada, under the Private Sponsorship Refugee Program. Growing up, both of my parents always worked 2-3 jobs to make ends meet. Something inside of me always made me feel I should accomplish more in life and become more deserving without compromising family. The choices I've made throughout life have all been in efforts to provide my four kids and provide them an even greater opportunity as they deserve a better life.

The support and quality of education I received at CPP changed my life forever. I shall forever be grateful for the support I received from my advisors and mentors Dr. Payam Parsa and Dr. Shokoufeh Mirzaei. I've been so blessed to have these two educators cast a positive influence on me. It is my pleasure and honor to help other students pursue their goals and dreams.

I personally believe that education is a pathway that opens doors, and yield opportunities that provide a better life. Each year, CPP accepts, supports, and helps immigrant students earn their degrees. The quality of the staff and faculty along with CPP's continuous mission to cultivate success through a diverse culture, is what inspired me to give back.

Research Spotlight



Dr. Victor Okhuysen Victor has been awarded a grant for \$116,000 from [Defense Logistics Agency](#) (through the Steel Founders' Society of America) to research the **impact of Cryogenic Treatment on the Properties of CD4MCu Type Alloys and the Impact of Section Thickness on the Properties of Investment Castings**. New alloys will allow for greater component life in heavily corrosive environments and the Section Thickness study will allow for better prediction of mechanical properties in components.



Dr. Javad Seif is leading a project focused on reliability analysis and quality improvement of a prototype injection device owned by JJ Mauget Co. This is a collaborative project with Dr. Maryam Shafahi from Mechanical Engineering department. In the first phase of the project, the prototype was analyzed from a reliability standpoint and a new prototype was designed and manufactured mainly using 3-D printing. In the second phase of this project, the team is improving the design and production process of the device. This includes quality control policies, production planning and scheduling, facilities layout planning, and economic analysis. In addition, Dr. Seif has received a [seed grant \(SIRG\)](#) from Cal Poly Pomona for \$15,000 to for a project entitled "**Network Optimization and Business Model Development for A CPP-based Cost Competitive Energy Storage System**"



Dr. Payam Parsa and Dr. Shokoufeh Mirzaei have received a [seed grant \(SIRG\)](#) from Cal Poly Pomona for \$10,750 to study the "**Infrastructure Requirements for Transition of Medium-Heavy Duty Commercial Trucks to Electric Fleet in the State of California.**" California announced a transition to zero-emission medium-heavy duty vehicles by 2045. This is an enormous goal and has enormous consequences for transportation across the state.



Dr. Placencia has recently been promoted to Associate Professor of Industrial and Manufacturing Engineering at Cal Poly Pomona. He has been researching human trafficking and food insecurity. In addition, he is updating the Human Engineering Lab to include a SuitX passive exoskeleton and virtual reality headset. He has also been incorporating data analytics, artificial intelligence, and virtual reality into human factors engineering. He will be taking sabbatical leave in the Fall of 2022 to study human trafficking in Malaysia, and virtual reality and blockchain for academic and industrial use.

IISE OR Teaching Award



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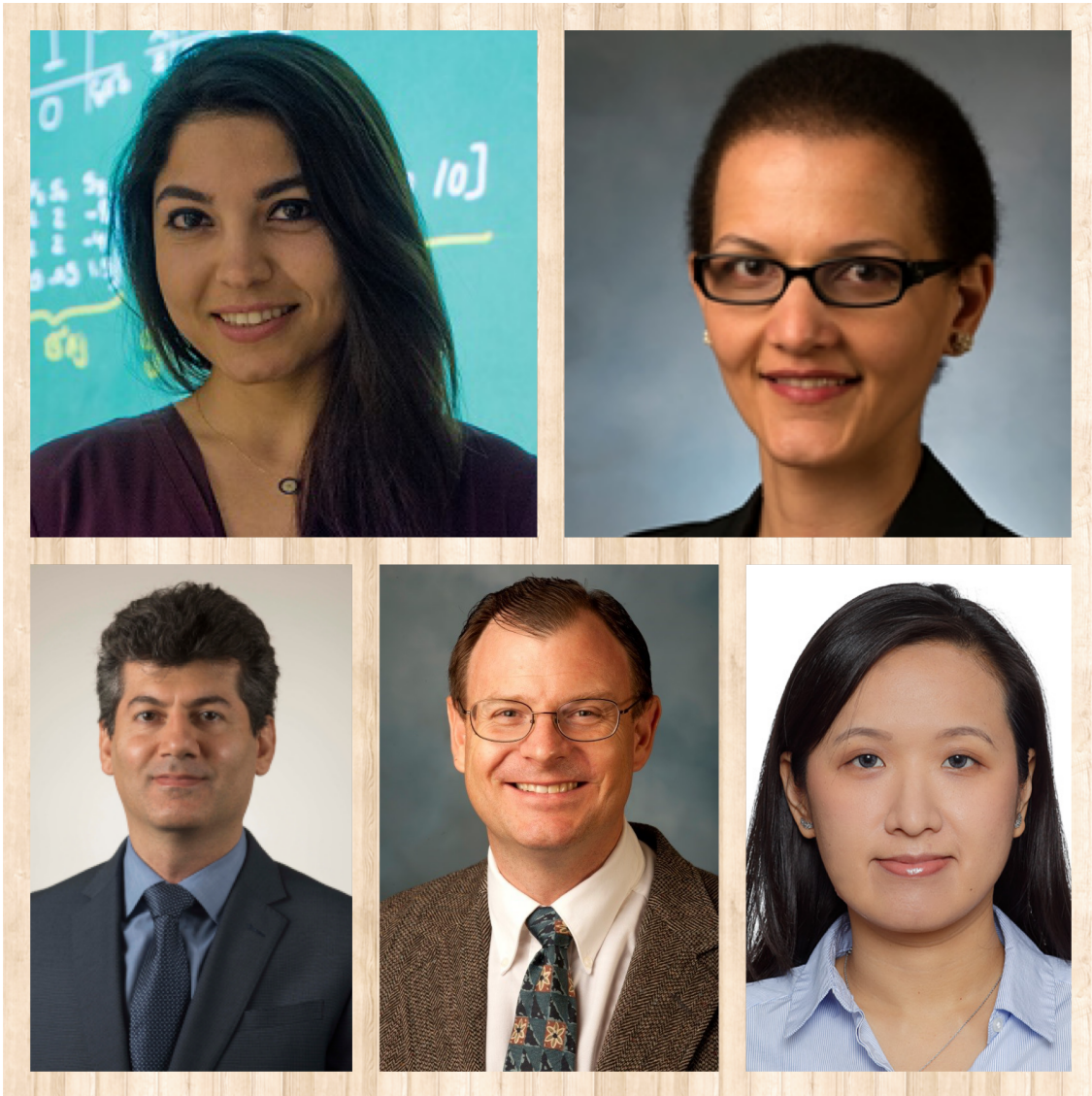


Each Year, the OR division of IISE presents an annual national award recognizing excellence in teaching operations research. The award is presented at the IISE Annual Conference & Expo, May 22-25, 2021. This year,

Dr. Shokoufeh Mirzaei, Associate Professor and Chair of the Industrial and Manufacturing Engineering Department from Cal Poly Pomona is the recipient of this award. She has recently been elected as the U.S. Western Regional VP for IISE. Shokoufeh is being recognized for her effort in developing textbooks and course materials as well as her teaching style in the area of Operations Research. More details on her OR teaching journey:

Starting in 2012 Dr. Mirzaei began teaching IE 4160 - Operations Research course. She modified the course to be partially hybrid beginning in 2015, in which she taught face-to-face and some online sections. She created three [YouTube playlists](#) (two that focus on operations research, and one that focuses on data analytics) which are publicly available and widely utilized with 12.5K subscribers and over 2 million views. The videos have garnered enough views to generate a small amount of income, which allows her to self-support the cost of video production. In 2016 she was the recipient of the Wall of COOL award for her effort to develop material for the IE-4160 course. Wall of COOL celebrates exemplar course design and development by Cal Poly Pomona faculty for student success using technology. In 2017, Dr. Mirzaei authored [a multi-media, non-traditional textbook](#) which offered greater depth and affordability compared to the 1420-page textbook "Operation Research: Application and Algorithm" written by Wayne L. Winston which covered a wider range of topics but did not offer the depth she wanted for her students in IE 4160. The course became fully hybrid beginning in 2017, making her ahead of the curve for what would be needed for teaching in the years yet to come. The course assessment results showed that hybrid classes were the most optimal for student learning and outcomes for the operations research topics. In the new education landscape that started in 2020, the course was taught hybrid synchronous and asynchronous, using the syllabus that was already in place but switching the face-to-face portions to live web video conferencing and utilizing the online videos to aid in the instruction for an asynchronous portion of the course.

Labs and Classroom Modernization



Multiple faculty members of the IME department have received the [SPICE grant](#) for the purpose of modernizing the classrooms and labs as well as implementing innovative instruction techniques. Below is the list of grants received:

Classroom Modernization

1. **Dr. Dika Handayani** (bottom right): “*Advancement of Additive Manufacturing Capability through Installation of Fiber Composite 3D Printer*” was recommended for funding in the amount of \$29,615
2. **Dr. Ellips Masehian** (bottom left): “*Enhancing the IME Automation Lab with PLC-controlled Mini-Production Lines*” was recommended for funding in the amount of \$25,000
3. **Dr. Shokoufeh Mirzaei** (top left) & **Dr. Ellips Masehian**: (Department’s submitted proposal): “*Augmenting the Computer-Integrated*

Manufacturing Laboratory with Traffic-Light and Industrial Motor Control Devices” was recommended for funding in the amount of \$29,950

Innovative instruction:

1. **Dr. Dika Handayani** (bottom right): “Transformation to Next Generation CNC Machining” - \$20,843
2. **Dr. Saeideh Fallah Fini** (top right): “Developing a digital library of educational content to maintain the prerequisite relations among courses in Industrial and Manufacturing Engineering program curriculum” - \$4,200
3. **Dr. Victor Okhuysen** (bottom center): “Development of a New Investment Casting Lab with a Format to Assist Student Success For Urg And Other Vulnerable Populations” - \$9,690

Collaboration with the Industry



The IME department and [PSCBiotech](#) have kickstarted their collaboration in various areas such as undergraduate and graduate students recruitments. PSCBiotech offers life science consulting in biotechnology, pharmaceutical research & development.

End of year banquet of the IME department



One of the greatest traditions of the IME department at Cal Poly Pomona is the end-of-the-year banquet where the students, faculty, and industry advisory board members gather together to celebrate the end of another academic year and recognize the achievements of students in various areas. This year's banquet was the first banquet after two years of skipping the event due to COVID-19 pandemic restrictions. In this event, student club members were recognized and multiple scholarships were given to highly-achieved students of the department.

Valedictorians



Congrats to this year's valedictorians, Abdullah Mohammad Mayyasi (left-industrial engineering major) and David Minasyan (right-manufacturing engineering major). It's no easy feat to have the highest GPA for your program, and it's even harder to have the highest GPA among the Class of 2022.

Student Success

The Cast In Steel Annual Competition



The IME department at Cal Poly Pomona earned the “Best Casting Award” at the Cast In Steel 2022 competition. This is an international competition with entries from Europe, Mexico, United States, and Canada sponsored by the [Steel Founder’s Society of America](#) and the [American Foundry Society](#). The students on this team were Daniel Carranza, Jose Raygoza, Edwin Rodriguez, and Quentin Nelson. Cal Poly Pomona was the only school to place two teams in the top five finalists, the second team was composed of Anthony Landaverde, Serena Haddad, Alex Ann, and Nate Webb.

IISE Outstanding Capstone Senior Project Finalist



A team of IE seniors, advised by Dr. Saeideh Fallahfani, (from left to right:

Elizabeth Gutierrez, Miriam N. Rodriguez, Katherine D. Moreno, and Julia Silva) has become a finalist in the [IISE Outstanding Capstone Senior Design Project Competition](#). They spent about a year (July 2021-May 2022) collecting data and analyzing the processes at the quality control lab of [Prolacta Bioscience](#), one of the pioneers in producing human milk-based nutritional products to meet the needs of critically ill and premature infants in the NICU. The ultimate objective of the project was to reduce the cycle time and sources of variability at the quality control lab of the company. They used a set of industrial engineering tools and techniques to understand the current state of the system, find the potential causes of underperformance, and finally propose various solutions to address the sources of inefficiencies and ineffectiveness and achieve the objectives stated. The proposed recommendations lead to a one-day reduction in the cycle time of the quality control lab and about two million dollars in net present value in the span of five years.

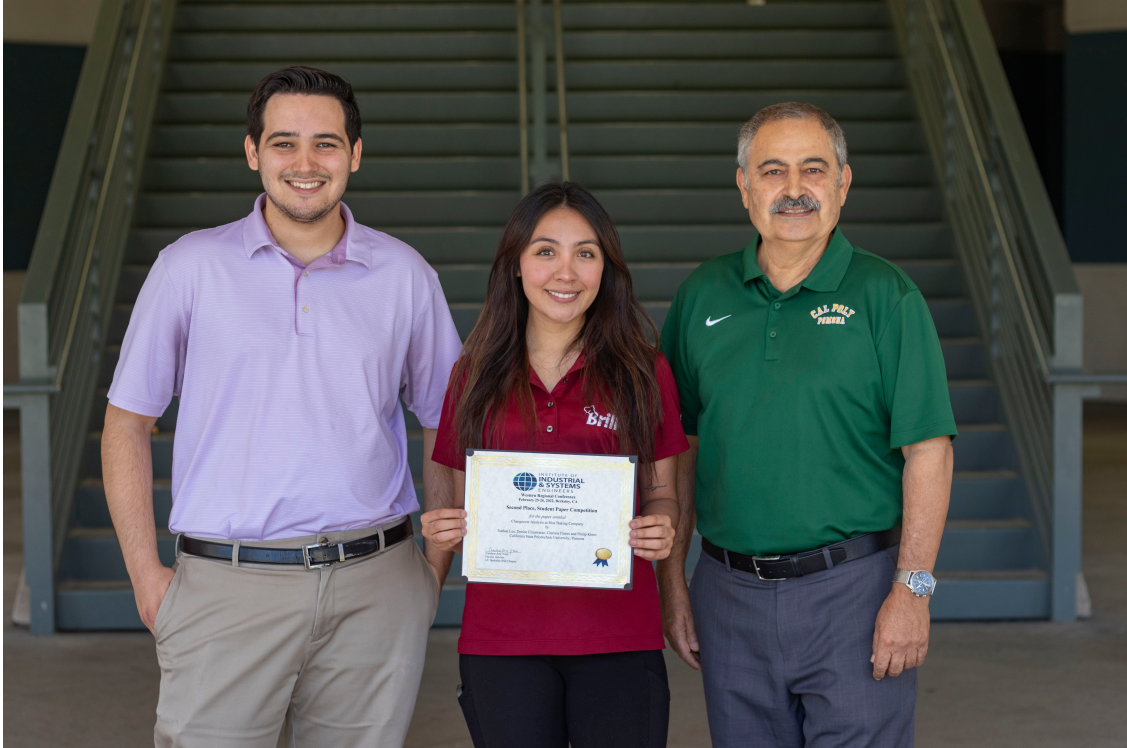
CSCMP Annual Scholarship



Julia Silva is a senior Industrial Engineering student with a minor in Business and is pursuing a career in the field of Supply Chain and Logistics. Julia is originally from Brazil and is graduating in Fall 2022. This summer, she will be returning to Brazil to intern for Anheuser -Bush as a project engineer for Mike's Hard Lemonade. She was awarded the annual scholarship of the [Council of Supply Chain Management Professionals, Southern California Roundtable](#).



IISE Western Regional Conference



The paper presented at the IISE Western Regional Conference and Technical Paper Competition entitled " " authored by Nathan Lee, Denise Elizarraraz, Clarissa Flores, Philip Khiev, presented by Nathan, and advised by Dr. Kamran Abedini won the Second Place award in March 2022 at UC Berkeley.

Recruiting the next generation of IME





A group of eighteen high school students from Temescal Canyon High School visited the Industrial and Manufacturing Engineering Department on May 4th. The students are members of Titan Engineering & Technology Academy which prepares students to go on engineering programs after graduation. During their visit, Dr. Moe Rabea gave the students a presentation on manufacturing engineering. The group also received a tour of IME manufacturing labs and enjoyed lunch at the Center Point! The IME department hopes to see some of the Titans as IME students in the near future.



Our Mission: Prepare students for industry and advanced studies by implementing an inclusive polytechnic philosophy through collaborative teamwork, innovation, entrepreneurship and professional integrity.

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