

# Mt. SAC Engineering Industry Advisory Board Dinner Meeting

## September 19, 2019

### Meeting Minutes

#### ***Introductions:***

Eugene Mahmoud opened the meeting. Industry members and faculty present conducted brief introductions.

#### ***General Mt. SAC Engineering Student Transfer Data and Involvement Information:***

Martin Mason provided information pertaining to the engineering program, faculty and students: Mt. SAC is the largest transfer institution in California. Current data reveals that of the 170 students who applied to Cal Poly Pomona, 100 were accepted. The Mt. SAC Engineering program now has 4.5 full-time faculty members and 7 adjunct. Those faculty members teach 13 transferrable courses. There are several student teams and clubs on campus: Robotics Team (participated in World's this year), the Rocket team, Engineering Club and SHPE, SWE have formed clubs.

Currently, faculty members are working on developing and/or revising a critical thinking course (ENGR 1C), mechanics of materials course and the robotics course.

An explanation of the CID was given: CID is a common course designation to evaluate course to meet the state standards.

#### ***Partnerships and Transfer Agreements:***

Eugene Mahmoud explained some specifics related to the student transfer process. He explained that students can transfer up to 70 units.

Carolyn Robinson discussed the work being done through the funding of the Guided Pathways grant. Faculty are conducting meetings to establish relationships and develop transfer agreements with Cal Poly Pomona, University of California at Riverside, and California Baptist University through the.

Martin discussed some students transferring may attempt to optimize their GPAs by taking fewer classes. However, students who take more rigorous courses might be expected to have the same GPAs.

#### **Industry Discussion:**

Tutoring was suggested. Students should utilize the campus tutoring programs to optimize their GPAs. The industry advisory board strongly supports the creation of detailed transfer program pathways for engineering students. These pathways would include: Aerospace Engineering, Civil Engineering, Chemical Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, Manufacturing Engineering, Mechanical Engineering, and Software Engineering.

#### **Faculty Response:**

Students are aware of the campus tutoring centers, SI Program (offered to conducting homework review), Makerspace and the STEM program (where additional tutors are available). Funding constraints have made some of these resources very limited particularly for SIs for the engineering courses.

Martin described the Strong Workforce grant and the engineering technology program. Most students struggle financially and often leave school to financially help their family. The Strong Workforce program will enable students to train and earn certificates which would enable them to secure a living wage job.

The Mt. SAC Engineering Program would like to partner with industry to place student in positions that enable students to earn a living wage.

Industry Discussion:

Help students get their resumes ready for a job interview. Encourage students to include (FE and certifications such as CAD, ICC, mechanical and plumbing).

The industry advisory board supports creation of Engineering Technology certificates. They see how these certificates could potentially lead to job placement, and students with engineering technology certificates are more attractive as hiring candidates for entry level positions that are in the technology sector but are pre-engineer. These include doing CAD work, maintenance, technical support, plan check.

Industry members encouraged general resume development: Students should focus on various licenses and certifications (e.g. CPR certified) achieved and project-based learning activities (e.g. Matlab); Demonstrate an ability to evaluate product; Possess organization and analytical skills; focus on instrumentation/ enable certifications such as networking Ethernet standards. Include internship programs, previous completed projects.

During student Interviews: students should be articulate, and be able to explain what is on their resumes such as: teamwork/collaboration, leadership/initiative/ individual projects/ championed activities; opened to learning.

Currently students lack the ability to communicate. Communication skills are essential. Often 4.0s don't know how to communicate. Strengths for students would be the ability to explain what they have been are working on. "Are you good at explaining things?"

A suggestion was made to encourage students to participate in a corporate shadow program and the Young Professional Engineers Forum. Show students how to sell themselves.

Industry Discussion:What are the needs of industry?

ENGR CAD (Solid Modeling): Structural – Civil 3D, AutoCAD (top priority), Revit, Inventor, Solidworks, Virtual modeling, actual modeling. Communication and presentation skills. Particularly the ability to give oral presentations. Critical thinking.

Industry Discussion:How important is ABET in your industry?

ABET is the Accreditation Board for Engineering and Technology. It is a non-governmental organization that accredits post-secondary education programs in applied and natural science, computing, engineering and engineering technology was a valuable acknowledgement for students.

The Mt SAC Engineering Program is seeking ABET accreditation for its Engineering Technology program as there is a nationwide push. CSULA has received approval by Chancellors office for its Engineering Technology program. They are working to develop four year engineering technology degrees. CSULA civil engineering would like to explore creating transfer pathways in engineering technology with Mt. SAC.

Students who start at a community college are taking seven years on average to complete a Bachelors degree. 70% of college students work to support themselves. Mt. SAC Engineering / Engineering technology is looking to create certificates to lead to workforce placement in technical fields related to students disciplines, so they can gain useful experience as they complete their degree. The Mt. SAC Certificate Program will include a 4-tier ladder starting with Fundamentals of Engineering certificate which is designed to be achieved in 6 months(18 units). The Fundamentals of Engineering certificate would help companies identify a minimum level of technical background to place a trainable student with basic physics, chemistry, engineering and math skills into a entry level position that would train them in the specifics of that position. The industry advisory board supported the creation of this certificate and suggested this would help them in identifying candidates for entry level non-engineering positions that would aid engineering students in gaining experience to be useful in industry. Two additional levels of Engineering Technology certificate are proposed in the areas of Civil, Electrical/Computer, Mechanical, Software and Chemical. Each level would signal increasing technical background in the engineering technology discipline. Advisory board members indicated that this would be useful in making hiring decisions for entry level positions.

Industry Discussion:What are industry growth areas?

Forty-four percent of the current workforce will retire and specialty disciplines such as quality/ reliability/safety/ maintenance predictive/preventative/ corrosion rehab/ multidiscipline – electrical mechanical will be essential.

***Additional Programs for Student Recruitment:***

Brandon Saller discussed the Summer Bridge. Student participants would be involved during the summer prior to enrollment in a 2 week program. It is estimated that the program would start in 2021. The goal of the program would be to develop students with the use of hand-on projects and an increased focus on the project-based learning (PBL)component.

John Hill currently incorporates a PBL activity in his statics course. The project requires students to construct a yard arm through the use of different materials. Students also utilize the Makerspace to do their construction. These activities address real-world problems to engage the students.