



**Engineering Exchange for Social Justice**

*From, With & For the Community*



*Most of us do not think about it,  
but everything human-made  
has been engineered by someone,  
for some reason. But who decides  
what is engineered and why?  
Who benefits and who pays?*

## Engineering Exchange for Social Justice

The Engineering Exchange for Social Justice (ExSJ) defines a new approach for engineering and community partnerships. Through the mutual exchange of expertise, technical know-how is combined with contextual, cultural and historical knowledge of the community to identify real needs. Community defined ‘problem briefs’ can then be turned into actionable student assignments, design projects, research theses or extracurricular pro bono engineering projects that are supported by local professionals.

With a collaborative effort, we can produce just and enduring pathways towards long-term solutions that not only address community requests, but also begin to shift the paradigm of engineering towards a profession and practice that is equitable, i.e., designed by and for all.

Led by USD’s Shiley-Marcos School of Engineering, with support from the Karen and Tom Mulvaney Center for Community, Awareness and Social Action, the ExSJ aims to transform engineering education and the practice of engineering, while serving local and global communities and providing invaluable experience for our students.



## What Makes Us Unique?

The unique approach of the ExSJ is to provide mechanisms for all partners, i.e., **community groups, nonprofit organizations, professional engineers, faculty and students**, to come together in an equitable collaboration to co-create solutions to socio-technical challenges.

The ExSJ supports this work through the following structures:

- Professional development for students, professional engineers, faculty and community members.
- Engagement in a developing community of scholars.
- Exchange of knowledge, skills and ideas to co-define and co-create solutions to intangible socio-technical problems.

### Dominican Republic: Above

*Since 2014, USD faculty, staff and students have partnered with local organizations and community leaders in El Cercado, Dominican Republic to research, develop, test and implement sustainable engineering solutions to help improve living conditions of villagers in El Cercado and its vicinity.*

### Kumeyaay Language: Top Left

*USD students learning the Kumeyaay language through a traditional game being taught by the Kumeyaay students and Kumeyaay Language Coordinator, Debbie Stein.*

### STEAM Youth Academy: Lower Left

*High school students engage in hands-on learning to enhance their problem solving and critical thinking skills.*

## Collaborating with Communities

The ExSJ works with communities both near and far — not by addressing assumed wants or needs, but by sharing and exchanging ways of being in the world. This reciprocal engagement is facilitated through the following practices:

- Using a ‘shopfront’ approach that allows communities to present their challenges and initiate partnerships to address them.
- Empathetic and contextual listening and responsiveness, especially to the voices of people who have been marginalized.
- Igniting *confianza*, which is a form of mutual reciprocity where all parties recognize and honor familiarity and trust in the relationship.

We have developed a number of schemes to bring our partners together.

### Community Awards

Community awards are designed to support community members in their initiation of partnerships with teams of students, faculty and pro bono professionals to work together on projects. There are two available kinds of community awards:

- **\$1,000 Project Development Award:**  
To support the co-development of a community-defined problem brief.
- **\$5,000 Seed Fund:**  
To support the design and development of an engineering solution to a community need.

### Community Forums

Community forums are held regularly on a variety of themes such as ‘waste’, ‘energy’ and ‘transportation’. Community groups, nonprofit organizations, engineers, faculty and students are invited to attend, share their ideas and potentially form teams that might work together in the future.

### **Partnership with the Viejas Band of Kumeyaay Nation**

*“The fact that 4th and 5th graders are asking about engineering in a university is amazing. We opened up a dialog and placed no limitations. They are finding their voices, sharing their ideas and passions. This is an incredible exchange across the board.”*

**DEBBIE STEIN**

Language Program Coordinator and STEAM teacher  
Viejas Band of Kumeyaay Nation







## Working with USD Faculty and Students

Our faculty and students often work tirelessly to share their engineering knowledge with communities — and they do this on top of an already very heavy workload. The ExSJ supports our professors and students to engage with communities and do the incredibly important work of enhancing social and environmental justice through its ExSJ Scholars program.

The ExSJ Scholars program is open to faculty and students from the Shiley-Marcos School of Engineering (SMSE), as well as faculty and students from across USD, who are working together with partners from SMSE on community-situated, socio-technical projects.

Successful scholars will be awarded for a period of one year before renewal, and they may receive up to \$500 per year to support any aspect of their community work. To gain ExSJ Scholar status, students and faculty must:

- Participate in at least four ExSJ, USD or external community professional development/ social justice events, including conferences, workshops, seminars, etc.
- Provide evidence of ongoing socio-technical community work.
- Provide a 500-1000 word reflection on how they have applied new knowledge and skills gained from professional development or other events/ activities to their community engagement work.

The assessment criteria for applications will focus on six important areas:

- A clear focus on benefits to community.
- Clear focus on the nexus of the social and technical.
- Evidence of professional development in areas related to community engagement.
- Evidence of a scholarly approach to community engagement.
- Evidence of compliance with the ExSJ ethical and legal guidelines.
- Evidence of having applied lessons learned through professional development to community engagement and details about how this benefits the partnership.

Applications are welcome on a rolling basis all year, but ExSJ Scholars will be awarded at an annual event in the fall semester.

## Partnering With Professional Engineers

We are expanding the tremendous support we already have from local professionals by creating a pro bono network. Professional engineers, architects, social scientists, environmentalists, educators and others who have skills relevant to the aims of ExSJ, are invited to join. Participation in this network will allow professionals to share knowledge, resources, equipment, facilities, and most importantly time, with our students, faculty and community members, and join with teams in support of the projects on which they are working.



## ExSJ Community Lunches

Once a month during the academic year, we will be hosting lunches to support our growing community of practice. We will provide a light lunch and a meeting space, and invite anyone interested to come and exchange their experiences and knowledge about their socio-technical work. Faculty, students, pro bono network members and community group representatives are all welcome to attend.

## ExSJ Professional Development Events

We will be hosting events focused on topics related to engineering and engineering education for social and environmental justice. We also recommend many other events across campus which are critically relevant to our aims. These include, but are not limited to the events hosted by:

- The Mulvaney Center
- Changemaker Hub
- Center for Educational Excellence
- School of Leadership and Education Sciences
- College of Arts and Sciences
- Humanities Center
- Black Student Resource Center

## Funding and Support

We are actively seeking funding partners to join us in this exciting adventure, which can help local communities, support the development of students, and contribute to a just, sustainable and equitable future for all. To register for ExSJ events, to become an ExSJ Scholar or to support the ExSJ, please contact us at [ExSJ@sandiego.edu](mailto:ExSJ@sandiego.edu) or visit [sandiego.edu/ExSJ](http://sandiego.edu/ExSJ).



