

UCSD NANOENGINEERING/CHEMICAL ENGINEERING
SEMINAR SERIES

Wednesday, October 19th, 2022

Seminar Presentation: 11:00pm - 12:00pm PDT

SME room 248

*“Supporting students in approaching complex projects:
Case studies inside and outside the classroom”*

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Abstract: There is increasing recognition of the value of inquiry-based and integrated approaches to engineering education, which introduce students to multi-faceted problems early in the curriculum. However, it can be challenging to design activities for undergraduate students that maintain real-world complexity but also provide a framework for students to feel engaged and successful in their work. In this talk, I will discuss case studies from two programs, integrating elements both inside and outside the classroom, which focus on engaging students with real-world context for their work while providing a supportive framework for success.

Global Engineering and the Social Context is a combined on-campus and travel course developed by a multi-disciplinary team at Rose-Hulman Institute of Technology, including faculty across engineering disciplines, the humanities, and social sciences. The course is targeted toward first- and second-year students and introduces engineering design as applied to global challenges such as access to water and development of sustainable building materials. Based on input from industry advisors and our Office of Global Engagement, the course team developed a list of learning objectives focused on technical skills as well as socio-cultural knowledge. The course provides an early opportunity for students to gain global experience, including travel to Kenya or Germany, which they can leverage for future programs, courses, and internships.

“An Entrepreneurial-Mindset Driven Framework for Undergraduate Research” is a multi-institution collaboration funded through the Kern Entrepreneurial Engineering Network. Although there are many examples of highly successful apprenticeship-style undergraduate research programs, challenges still remain, including making research experiences available to a more diverse group of students and ensuring that both students and mentors maximize the benefit from the time they invest in undergraduate research. The framework of entrepreneurial mindset can provide strategies to help student researchers identify stakeholders in their research, take ownership of their projects, and maximize impact. I will introduce educational materials that the collaborative group is developing, which are targeted at various audiences in engineering research (first-year students, current student researchers, and faculty). These will be available soon to share with interested faculty and staff at other institutions.

Biosketch: Dr. Irene Reizman is currently the Alfred R. Schmidt Endowed Chair for Excellence in Teaching and Associate Professor of Chemical Engineering at Rose-Hulman Institute of Technology. She earned her B.S.E. from the University of Michigan and her Ph.D. from the Massachusetts Institute of Technology, both in chemical engineering. In addition to teaching and developing engineering courses, Dr. Reizman has mentored over 40 undergraduate researchers through individual projects and the Rose-Hulman International Genetically Engineered Machine (iGEM) competition team. She is currently co-PI on a multi-institution project funded by the Kern Family Foundation to enhance the integration of entrepreneurial mindset in undergraduate research. Her research encompasses both a technical program, focused on undergraduate projects in synthetic biology, and an engineering education component, examining the impacts of undergraduate research experiences on student mindset and educational outcomes.