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THURSDAY, APRIL 22 1:00-1:50 PM

ME Research Seminar

Belonging & Access to Help in Engineering:
Results from a Network Analysis, Field Experiment, & Interview Study

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Ph.D. Candidate, Department of Mechanical Engineering

The process of becoming an engineer involves having access to the people of an engineering community. By working with other engineers, students can see what engineering is, who they might become, & to what extent they belong. This talk addresses the following questions: How do engineering students access help from others & gain (or lose) a sense of belonging? How does access to help vary over time & across student subgroups? How much is students' perceived belonging associated with retention (i.e., graduation rates)?

We will examine results from a longitudinal network analysis, field experiment, & interview study with engineering students. The first study follows undergraduate & masters students in a 10-week introductory design & manufacturing course. We found that students who had few prior relationships in the course or identified as first-generation college or low-income reported receiving significantly less help than their socially or economically advantaged peers. This gap in help-received widened with time & may be self-reinforcing. The second study follows engineering Ph.D. students over seven years from program entry to exit. We found that, among a sample of students who identified as Black, Latinx, Native, or Pacific Islander, those who began the doctoral program with low versus high perceived belonging were associated with a 7% versus 60% probability of completing their Ph.D., respectively.

Taken together, these studies suggest that help from others is not equally accessible across engineering students & that disparities in perceived belonging & access to help are tied to important outcomes like graduation. These findings have implications for how engineering learning environments may be designed to facilitate more equitable access to learning resources & engineering pathways for all.

Speaker Bio:
Eric Reynolds Brubaker is a Ph.D. Candidate in Mechanical Engineering at Stanford University. His dissertation (different from this seminar) is supported by a NSF Graduate Research fellowship & investigates how engineers at global product development firms collaborate & learn across functional & organizational boundaries to solve grand challenges (i.e., energy insecurity). From 2010 to 2016, he was an instructor at MIT where he taught design, manufacturing, & community-engaged courses. He also managed a MIT entrepreneurship program & helped launch Zimba Water, a for-profit social enterprise in India. Previously, he was an engineer at Battelle Memorial Institute & researcher at New England Complex Systems Institute. He holds a B.S. & M.S. in Mechanical Engineering (Ohio State '09, Stanford '18), & M.A. in Education (Stanford '21, expected).

THURSDAY 4/22 1-1:50 PM
Zoom: tinyurl.com/MinesS21

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