From Service to STEM: Engineering Education Professor Receives Prestigious NSF CAREER Grant | College of Engineering

02/15/2021

News Release — Feb. 15, 2021 — A Utah State University College of Engineering researcher has received one of the nation’s highest awards from the National Science Foundation.

Angela Minichiello, an assistant professor in the Department of Engineering Education, was awarded the NSF Faculty Early Career Development, or CAREER, grant. This funding is reserved for faculty early in their academic careers who showcase potential to serve as role models in both research and education. Minichiello will receive five years of funding of $568,000 for her proposal to engage and support student veterans and military service members in university engineering programs.

The grant is the 14th CAREER awarded to College of Engineering faculty in recent years.

Minichiello’s project includes two parts. The first part is to understand the experiences of military-connected students as they progress through their undergraduate engineering programs. Despite their potential for having interest in and exposure to STEM through military experience, very few veterans and service members go on to study engineering. Minichiello attributes that, in part, to negative messaging that surrounds military personnel in higher education. But she expects their experiences to be even more layered and complex. By documenting students’ experiences, Minichiello hopes to learn about the obstacles they face — what about the institutional context or engineering curriculum excludes or “others” them — the unique skills and attributes they bring to engineering, and how they ultimately come to view themselves as engineers.

Seeing themselves as engineers, what Minichiello calls professional formation, can play a huge part in military students’ successful transition to college. “When you’re in the military, you naturally develop a strong military identity,” said Minichiello. “But then things shift and somehow you have to reconcile that identity with who else you are becoming — what your next identity will be.”

The second part of the project is to advocate for these students. Using the narrative data collected, Minichiello will develop university allyship and mentoring programs for military students in engineering. These programs will be developed with and supported through the Veterans Resources Office at USU and four other collaborating institutions. The programs will also involve local community members, faculty, and other students with both military and engineering experience as mentors and trainers.

This project has personal relevance for Minichiello. A military veteran herself, she experienced tensions between her Army and academic identities while attending graduate school in engineering upon leaving military service. “Later, as I became an ‘academic’, I chose not to self-identify for a long time, not even to the students in the courses I taught, just because my graduate school experiences told me that those in academia may not respect or welcome those of us affiliated with the military. It’s taken me a long time to make sense of these tensions in my professional life.”

And while her project focuses on military-connected students, Minichiello also hopes it will work toward a broader goal: to diversify engineering education and the engineering workforce. Tapping into the military will bring more women, persons from underrepresented racial and ethnic groups, persons with disabilities and first-generation college students into engineering.

“Put very simply, the current engineering workforce is not diverse. And we desperately need diversity in order to develop creative and sustainable approaches to the technological, environmental and societal challenges we face coming into the 21st century and beyond. As a profession, engineering needs all hands and minds on deck.”
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