

Engineering Students to Represent USU at Women in Engineering Conference | College of Engineering

Rachel Israelsen

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Jan 15, 2020 — Utah State University undergraduate student Morgan Bishop and PhD student Lori Caldwell were selected as finalists for the Women in Engineering Local Collegiate Competition to be held in Salt Lake City, Feb. 7-8. Both Bishop and Caldwell will be recognized as outstanding contributors to engineering at the conference. Bishop is in her final semester at USU, earning a bachelor's degree in biological engineering. Caldwell earned a bachelor's and master's degree in biological engineering from USU and is now in the second year of her PhD program under the direction of Dr. Angela Minichiello, assistant professor in the Department of Engineering Education.



Morgan Bishop

Bishop is an active member of the USU student section of the Society of Women Engineers, known as SWE, serving as outreach coordinator. As a student, Bishop works under the direction of Dr. Elizabeth Vargis and in collaboration with Dr. Cindy Hanson and Dr. Abby Benninghoff in the Tissue Engineering Lab. Her research involves extracting fatty acids from mouse fecal samples and analyzing them using spectroscopic techniques. Bishop specifically works with Raman Spectroscopy to better identify these samples. The goal of her work is to develop a method of noninvasive detection of inflammatory bowel disease.

Caldwell's dissertation research is sponsored by the Office of Naval Research STEM Education and Workforce Program. Her research involves working with an interdisciplinary team comprised of engineering education, mechanical engineering and computer

science researchers to develop, evaluate, and broadly disseminate an open-source, mobile flow visualization and measurement tool for STEM outreach and engineering education in the area of fluid mechanics.



Lori Caldwell

Because undergraduate engineering fluids courses focus almost exclusively on mathematical problem solving, fluid mechanics can serve as a "gate-keeper" course that dissuades students from pursuing degrees in engineering disciplines related to fluids, such as naval, ocean and mechanical engineering. The tool, called mobile Instructional Particle Image Velocimetry or "mI-PIV," integrates state-of-the-art optical flow field imaging techniques used in research and industry with mobile hardware and LED laser pointers to provide learners capability to visualize and experiment with planar flow fields in real-time. Minichiello and Caldwell want the mI-PIV program to spur interest and improve participation in fluid mechanics. They say the program will support early development of student interest in fluid mechanics concepts via hands-on activities in high school STEM outreach programs and in undergraduate engineering courses.

WE Local is a Society of Women Engineers program developed to bring the energy and networking of SWE annual conferences to members around the world on a regional scale.

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UPDATE: Feb. 14, 2020 ** Bishop and Caldwell presented their research in both a lightning talk and in a poster session that were judged by women in academia and industry. They were judged on their overall presentation, quality of their visuals and the significance of the research. Caldwell placed second in the graduate level of the competition and Bishop placed first in the undergraduate level. Both were honored at the WE Local conference on February 8, 2020.

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