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Aquatic robots make a splash at UAF

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Photo by [Eric Engman](#)



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FAIRBANKS — The guppy floating in the pool at the University of Alaska might be pregnant, but it can jump, haul cargo and zip through an obstacle course.

The “guppy,” a plastic and metal contraption, is actually a remotely-operated underwater vehicle, known as a ROV. And its controllers are participants at the University of Alaska’s Alaska Summer Research Academy, or ASRA.

Now in its eighth year, ASRA hosted 125 participants, 23 of whom came from out of state and one who hailed from Australia. Fifty-nine of the students came from various corners of Alaska — from Anchorage to Fairbanks and villages in the Bush.

Jeff Drake, the director of the program and affectionately known as “Captain ASRA” to the participants, said the program provides an in-depth focus on science and mathematics that schools don’t have time to provide.

“They go home and their brains are larger,” he said.

He also said ASRA looks for instructors who have the rare mix of expertise in their field combined with the passion and ability to pass that expertise to a new generation.

Each participant chose one of 15 available modules — each dealing with a different subject — to focus on during the summer. The choices ran the gamut from robotics to earthquakes to biomedicine. New to this year’s program was underwater engineering, taught by Ed Moriarty, an instructor from the Massachusetts Institute of Technology. His participants frequently took to the pool for fun and for science. After all, the only way to test an underwater vehicle is to jump in and get wet.

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Anita Brease, 17, and one of the designers of the “pregnant guppy,” returned to ASRA this summer after completing the Earth and space module last summer. She said she wanted to return to the Academy because she wanted to participate in another interesting module. After signing up for the underwater engineering module, she became part of a team to build an underwater robot and remote to control it from scratch. The participants received just a little help from Moriarty.

“We all helped each other and built it from scratch,” Brease said.

But not all of the of the modules were focused on math and science. Drake said ASRA was working to incorporate more creative modules into its offerings. Participants were able to choose creative writing and digital photography as options this year.

Drake said the digital photography course was taught by a former ASRA alumna who attended Yale.

The Web and digital media module straddled the line between science and creativity. Participants used cutting-edge technology to produce videos, reports and blogs, but needed their creativity to determine topics of study while working at the forefront of communications.

Amie Pappas, a public information officer at UAF, helped students put together newsy packages about the goings-on at ASRA. She said the students were uploading content to the ASRA Web site every three days on average.

“The students are doing all of the writing and filming,” she said.

ASRA also offered “traditional” modules such as radical math and Earth and space science, but the curriculum was anything but boring. The participants in radical math applied their skills to a variety of tasks. On their lab tables, pieces of stained glass waited to be arranged into patterns, while other students used their math abilities to work on a programming project.

In the Earth and space modules, participants created interactive maps that included video, pictures and information — that is, when they weren’t having Monty Python sing-a-longs.

“The main thing is to get them engaged and for them to want to do it — then everything follows,” Drake said.

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