

MAE senior integrates her education career with classroom and work site experiences

“That was the easiest interview I ever had,” Johanna Cecava said of her experience at NMSU’s Career Fair in Fall 2007. She spoke with a representative from NASA and went away with an almost certain offer of a co-op at their Marshall Space Flight Center.”

Johanna will head off campus in early 2010 for the fourth time to integrate and expand what she learns in NMSU classrooms. She is officially a senior, in the ‘victory lap,’ heading for a December 2010 graduation with a BS in mechanical engineering, but she will return to NASA’s Marshall Space Flight Center in Huntsville, Alabama for the Spring 2010 semester. Since the summer of 2007, Johanna has been dividing her time between the campus and the workplace. She completed summer internships at NASA’s Jet Propulsion Laboratory (JPL) in California in 2007 and 2008, followed by a semester-long co-op the Marshall Space Flight Center in the Fall of 2008.



Johanna Cecava, far right, JPL volcanologist Ashley Davies and teammate (left) Kate Boudreau show off the volcano monitor they worked on at JPL. They accompanied the work team to Hawaii’s Big island to place the monitor near Kilauea Volcano.

“I love both, campus and work site,” she claims. “The work experience makes the course work more real, pertinent, and involves a great deal of teamwork and multidisciplinary input.” “The first project at JPL included a lot of electrical engineering aspects, such as circuits and programming. I worked with another intern, from the University of Idaho. We built a model of a volcano monitor to be used on a Hawaiian Island. The following November, I was able to go with the team that actually installed the monitor.”



Johanna takes a turn ‘driving’ the model rover Axel during her second summer at JPL.

dangling’,” Johanna explained. “It could be tethered to a host rover and handle steep terrain. The basic rover design was complete. Six interns worked on various aspects. I used MatLab for computational and experimental work.”

The next internship at JPL during the summer of 2008 gave Johanna experience performing tension experiments for a two-wheeled rover for possible use on Mars. “The rover, Axel, was designed for ‘cliff

Johanna learned of the internships by paying attention to her e-mail notices. “I am compulsive about opening all of them.” The pertinent one was from the New Mexico Space Grant Consortium based at NMSU; it alerted her to the internship opportunity.



Johanna tries out the glovebox at Marshall; it is a replica of the one used on the International Space Station.

California living was exciting for the Alamogordo resident with after hours fun - surfing and socializing with others on the Cal Tech campus. She headed for Alabama, however, with some skepticism about how she would fit in the southern culture. Huntsville, she discovered was not a typical southern city but a melting pot of engineers and aerospace workers from all over. The Army’s Redstone Arsenal is there, as well as numerous big name private industry companies. “A great job market for engineers,” according to Johanna.

The work culture also differed from JPL which she perceived as mainly academic. Many of the Marshall Space Flight Center people had been at NASA since the days of Apollo and Saturn V missions. “I received wonderful mentoring from Will Brandsmeier, as I worked on the project he lead.” She describes her work experience on the Ares I, mainly related to propulsion design, as depending on interdisciplinary coordination and networking.

When Johanna returns to continue this work, she will be in the same division as Ravi Purandare who received his PhD in the MAE department only a few years ago. She anticipates the planned work will involve a good deal of finite element analysis.