



Student Engineers Team Up Engineering's Redesigned First Year

“How many people did it take to design the first space shuttle?” asks engineering instructor Lisa Davids.

The fall semester has just begun at Embry-Riddle Aeronautical University, and Davids and 24 new students are still sizing each other up.

“Um, a hundred?” ventures a student.

“A thousand?” says another.

“It took over 100,000 people,” Davids says, putting them out of their misery. “It takes many teams of people to design complex systems.”

She pauses. “And it will take a lot of communication among you to accomplish what you need to do in this course.”

The course is EGR 101, the fun part of

a redesigned curriculum for all first-year engineering students on the Daytona Beach, Fla., and Prescott, Ariz., campuses. In it, students majoring in aerospace engineering, civil engineering, computer engineering, computer science, electrical engineering, and software engineering learn all about teamwork by tackling two major design projects.

In Daytona Beach, the student teams design a rocket launch system in the fall and an air transportation system in the spring. In Prescott, they design a four-wheeled robotic vehicle in the fall and a robotic helium-filled balloon in the spring, both of which must be controllable by flashlight signals.

Besides EGR 101, the freshmen engineers take computing, English composition and literature, humanities, social sciences, and two courses each in calculus and physics.

Developed last summer by faculty teams on both campuses, the common curriculum gives students a feel for how engineers actually work and exposes them to engineering disciplines other than the one that drew them to the university.

For most new students, that one big draw is aerospace engineering, the degree program that has won the university top honors in *U.S. News & World Report's* “Best Colleges” issue for the past five years.

Engineering in general has been enjoying a boom at Embry-Riddle – 690 new students this fall, up from 506 in 2000 – but most of it is in aerospace engineering.

With their early focus, however, students had been missing out on learning about other areas of engineering. The new first-year curriculum helps to fill in the gaps. Another part of the solution debuts next fall – an option called “Still Exploring,” in which the university helps new students discover during their first year which engineering discipline is best for them.

In EGR 101, students learn to work with other engineers to solve problems and design systems and structures, as they will do later in their careers. “Learning these things through projects gives them a taste of what’s to come, the endgame,” says Chris Grant, associate professor of civil engineering.

Back in the classroom, Davids asks her students to solve a series of timed calculus problems. When she gives the correct answers, there are groans of disappointment from those who got wrong answers. She then puts them in groups of four and asks them to solve a new set of problems with their teammates. This time, the scores come in better and faster, and with smiles, not groans.

The students are becoming engineers.

— **Robert Ross**