

Eastman helps Clemson University cultivate next-gen medical packaging engineers

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Students in the Package Design and Development program at Clemson University in South Carolina learn to think *inside* the box. Specifically, a select group of seniors recently did a deep dive into the materials, processes and regulatory parameters that are part and parcel of designing and manufacturing medical packaging. And they applied those skills with expert guidance from Eastman Chemical (Kingsport, TN) and partner companies Remington Medical, a supplier of disposable medical devices, and thermoformer Tek Pak.

In the Package Design and Development program's signature capstone course, a group of seniors is challenged to apply all they have learned during their time at Clemson—packaging design, material selection, prototyping, specifications and so forth—to a single project. It's a rigorous learning experience that happens within the halls of academe but is informed by real-world manufacturing and marketing dynamics.

Clemson Associate Professor Robert M. Kimmel described the objectives of the capstone course to sister brand *MD+DI* recently. "The course provides our students the opportunity to work in a small team [of four to five students] with an industry sponsor on a specific project within the context of learning a systematic approach to managing and documenting a packaging system development project. All packaging science undergraduates take at least three design courses. All of that training gets used in the capstone course."

Medical device packaging has not been a huge part of the program historically, but that's changing, writes *MD+DI* Editor Daphne Allen in her article, "Forming Medtech's Next Generations of Packaging Engineers." Of the more than 150 projects Kimmel has mentored over the past 15 years, only five have involved medical products, writes Allen. However, students began expressing an interest in healthcare packaging, and some of them were finding employment opportunities in that industry, Kimmel told Allen. Serendipitously, Aneta Clark, Global Market Segment Manager, Specialty Plastics—Medical Packaging, heard about the program and reached out to the university to explore collaborative opportunities. It all came together for the 2017 fall semester, when the students were tasked with designing and prototyping rigid packaging for various sizes of hip implants with a little help from their new friends at Eastman.

The students began by conducting ethnographic research at a local hospital and then moved into the ideation phase, keeping in mind requirements for sterilization, shelf-life requirements, shipping and distribution.

In addition to its polymers and industry expertise, Eastman provided funding for the program.

“The students had fun, but they definitely felt challenged,” Clark told **PlasticsToday**. “The project put them in a very different place than what they were used to.” The same could be said of Eastman, which also found the exercise to be a learning experience. The first iteration of the sponsored project “was just us interacting with the students, and we learned that it would be helpful to have some partners. It would help students, as well, to see the project through the lens of a thermoformer, for example, or even an OEM,” said Clark.

For the second time around in the fall of 2018, Eastman recruited Remington Medical and Tek Pak to participate.

“Tek Pak brought its processing and mold making expertise and Remington Medical helped the students address validation requirements,” said Clark. “Once the prototype was done, it helped students perform the various tests to make sure the packaging worked as intended.” The end result, shown in the image below, was impressive and looked quite professional, said Clark.



This year, Eastman is celebrating more than 40 years of “dedicated support to the medical manufacturing industry,” noted Clark, “and this project has allowed us to take the expertise and knowledge we have gained over the years and give these students a taste of what it’s like being an engineer who designs packaging for medical devices.” The students were

excited, intrigued and a little anxious when they learned of the scope of the project, said Clark. Ultimately, though, it was a rewarding experience once the final package took shape.

“It was rewarding for us, as well,” said Clark. “You almost test yourself a little bit, taking all your knowledge and trying to teach someone else. It was a unique experience, working with future talent, a group of motivated young people looking forward to their first jobs.”

Eastman only sponsors the program during fall semesters so that “we have time to adjust the scope of the project, as needed,” said Clark. The staff will regroup within the next month or so to “brainstorm a new project scope for the fall of 2019,” said Clark.