

Friday, Dec 04, 2015

Major companies partner with students to solve real-world problems in capstone ISE course

By John Turk

All semester long, Katie Folk and Adam Quinn, Industrial and Systems Engineering (ISE) students at Oakland University, have been trying to solve one problem – but not the kind found in textbooks. And not in a classroom.

Instead, Folk and Quinn are working on a real-world issue for a major health care provider as part of a capstone class within the ISE Department in the School of Engineering and Computer Science.

The fall semester in ISE 491 Senior Design for the two students has existed in hospital wings and with staff at St. Joseph Mercy Oakland Hospital, located in Pontiac. The project's focus is to attempt to decrease wait times for surgeons and their teams to use given operating rooms.

For the project, which runs through November, the senior Engineering majors observed various processes from the end of an operation – sometimes watching entire surgeries – until the beginning of the next one.

Throughout, they recorded and analyzed timing data, and from that, were able to see how time was divided between tasks during a turnover period.

“We saw jobs happening in the operating room that could likely be done at the same time instead of consecutively,” said Folk. “We’re working with hospital staff to see if it’s possible to realign tasks to run in parallel.”

The students are also seeking input from housekeeping and medical staff members on how to structure specific responsibilities, such as cleaning medical instruments, having equipment ready, preparing a patient and more.

Quinn said the experience of working with a company has been empowering.

“It feels great to know that what we learned here at Oakland is significant and that we are readily able to use our skills to work with industry,” he said. “Having a class that involved real-world experience is always great, but a class that is basically contracting students out to do a project that we might do in a career is a unique experience that is highly valued.”

The ISE Senior Design course, since its introduction in 2007, regularly pairs groups of two or three students with local companies to develop and implement solutions to various workplace issues.

The department is also partnered with General Motors, Fiat Chrysler Automobiles, Rayconnect Inc., DTE Energy, Crittenton Hospital Medical Center and Beaumont Hospital – Troy.

Students meet with the course instructor once a week, but are encouraged to work out answers to questions doing their own research. They present their projects, write reports and document their design processes using engineering standards. At the end of the semester, teams submit a final report to the sponsor company and often present their findings to its representatives.

Robert Van Til, Ph.D., chair of the ISE Department, said the project usually entails a project developed by the company involving a solution to an issue that could have immediate impact. In other words, each project is something each company truly wants to accomplish.

“Besides all the engineering aspects of these projects, the students are also working as part of a team from the sponsor company – St. Joseph Mercy in this case – and it requires them to use their soft-skills such as communications and teamwork,” said Van Til.

“This is an extremely important capstone experience that allows our ISE students to apply all the theory, concepts, tools and applications they learn in various courses to a real-world problem in a real-world environment.”

For more information about the ISE senior design project or the department, visit oakland.edu/ise.



OU Industrial and Systems Engineering (ISE) seniors Katie Folk, left, and Adam Quinn, center, discuss operating room turnaround times with Dr. Carl Roehling at St. Joseph Mercy Oakland Hospital as part of a Senior Design capstone course for their program.