

Suffolk catches wave of M&S tech

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A doctor walks into an operating room. Nurses surround a body lying on the operating table. The patient is undergoing a complicated heart surgery. The doctor slips on his gloves and goes to work. Halfway through the procedure, a complication occurs and the doctor — not knowing how to react — loses his patient.

Thanks to modeling and simulation, however, this was a simple training procedure using gaming technology to create a real-life simulation. The patient was nothing more than an avatar, a simulated person.

This scenario is the type of experience that plays itself out in “The Cave,” a 10 x 10 x 10 educational facility at Old Dominion University composed of four walls with projection screens that create a simulated environment — complete with people who give real time responses.

The education courses for modeling and simulation in Suffolk at the Pruden Center and ODU — where The Cube is based — provide unique and promising careers for high school and college students to break in to the industry.

“Modeling and simulation has become a tool many companies resort to, to understand the ‘what ifs’ of their business,” said Dean Oktay Baysal of ODU’s Frank Batten College. “It’s important for us not to be just importing students from other engineering programs and then retraining them for modeling and simulation. From the outset, we need to be educating students as modeling and simulation professionals.”

The education can begin as early as high school. The Pruden Center, which allows high school students to enroll in up to 12 credits of community college level courses, offers training courses for modeling and simulation support specialists.

Upon completion of the courses, after graduating high school and attending [Tidewater Community College](#), a student would qualify for an associate’s degree and be equipped for career opportunities in the field or with the foundation for a more advanced degree.

“If they decide not to go to college, there’s a very good chance they can get started at an entry-level job at companies like Northrop Grumman, Virginia Modeling and Simulation Analysis Center or MYMIC and make \$35,000 a year,” said Josh Burns, teacher at Pruden.

While the Pruden Center covers modeling and simulation at the high school level, to be completed as an associates degree through TCC, ODU boasts a broad-based modeling and simulation education for students in pursuit of higher education. ODU offers the only bachelors degree in modeling and simulation and the only complete modeling and simulation education, which includes a bachelors degree, masters degree, and two doctoral degrees.

The developments of the programs at the school have been a response to needs expressed at a corporate level.

“We’ve built our program one step at a time,” said ODU’s Baysal. “We haven’t said ‘we shall build a modeling and simulation program and [the industry leaders] will come.’ They’ve come with a need, and we’re responding to the need.”

That need comes from the expansion of the modeling and simulation industry. While modeling and simulation has existed for more than 50 years and ODU’s graduate program has existed since the 1990s, modeling and simulation technology has recently taken off and branched into several sectors, many of which are based in Suffolk and the Hampton Roads area.

“There are probably about 50 to 60 contractors located in the region — from very big companies to smaller ones,” Mielke said. “They’re all looking for workforce. Northrop Grumman uses modeling and simulation for ship designs. NASA uses it for aeronautical and space design. Hospitals are using it in medicine. The state is interested in modeling and simulation to help design new transportation. The list goes on.”

While modeling and simulation is an engineering science, it is far from your father’s engineering degree.

Myles Napier is in his second year in Pruden’s modeling and simulation program. Napier is interested in pursuing a gaming design degree, and he said the gaming aspect of modeling and simulation is what piqued his curiosity.

“Many people who come to our program are very good at math, but they’re also very artistic,” Burns said. “Their understanding of the arts’ language helps them come up with fantastic models.”

Modeling and simulation uses the same skill sets recreational gaming uses, but for education purposes – such as building a flight simulator that Microsoft also markets as a computer game for aviation enthusiasts.

“The demand for modeling and simulation is from very diverse industries,” Baysal said. “The automobile industry uses it to design cars. They use it in architecture to design buildings. Pixar uses it for movies. Microsoft came out with a flight simulator game that uses modeling and simulation to train pilots.”

The demand for graduates educated in modeling and simulation is high. The opportunities – particularly in Suffolk – are vast. All that is needed are the students.

“The United States needs a lot more engineers than we’re putting out,” Baysal said. “It’s a shame we have such a large gap between students coming out of high school and students going in to engineering. We’re beginning to see problems coming out of our country because of that shortage. They just aren’t interested or aren’t ready to begin an engineering program.

“We need to get more of our youngsters interested in engineering. It’s good for the country and good for the region.”