## Virginia Commonwealth University
## Richmond, VA

Virginia Commonwealth University (VCU), one of the most prestigious colleges in the country, set e-Control as its standard to connect and control every room at the university. VCU has over 200 Crestron connected rooms that are monitored and managed with RoomView®, and another 100 scheduled to be online in the immediate future.



One of the crown jewels at VCU is its innovative and revolutionary Nurse Anesthesia Simulation Center. The facility consists of a control room with one-way glass, three simulated operating rooms, a classroom for teaching and viewing the operating rooms and a conference room all connected by Crestron with distributed video and audio, and multi-site video conferencing capabilities.

One of the most groundbreaking programs conducted at the VCU Nurse Anesthesia Simulation Center is a NASA sponsored project training health care providers to respond to medical crisis in space. Lifelike computer-controlled dummies are used to simulate real world operating room scenarios in out-of-this-world environments. The dummies are state-of-the-art computer controlled robots that range in human development from infant to adult, and are capable of emulating actual human responses such as motion, breathing and talking.

The Simulation rooms are controlled by a RACK2 and a UPX-2 is used as a production switcher, controlling several video and audio sources and equipment including 11 ceiling mount cameras and microphones for each individual patient bed. Simulations are also recorded and streamed.

The control room for the operating rooms has a DTT-18 and a TPS-4000 to operate the system. The simulations and the detailed information displayed on the touchpanels are very impressive. The controller or director in the control room orchestrates various scenarios that the students must navigate success-fully. Simulations are monitored through the video window on the TPS-4000 with patient vital statistics, such as heart rate and pulse, superimposed over

the video in real time. The controller can cause the simulated patient to "crash" or go into crisis, and then watch how the students react. For example, one simulation involved a dummy's vitals to drop whenever a latex catheter was inserted, and the students had to diagnose the problem and respond appropriately to save the patient.

The control room microphone feeds to headphones that instructors and anesthesiologists in the simulation rooms are wearing. The controller can then direct the participants to take some action to affect the situation in the operating room. For example, the controller may have the instructor unplug a machine or coach the students.



Speech simulation may be affected for each dummy by either playing wav files or routing the control room microphone audio through the speakers in each dummy's head. The controller may respond to treatment or student questions in the operating room adding further to the realism.

The classroom and conference room both have PRO2 and TPS-4000 touchpanels. The conference room is located down the hallway from the simulation rooms and is connected to the SIM/classrooms for teleconferencing. Teleconferencing, including installed microphones, speakers and 32-inch LCD in the classroom and conference room, enables observers to interact live with student in the simulated operating room.

The Nurse Anesthesia Center at VCU is truly one of the most innovative training and research centers in the world, and an impressive application of Crestron technology by The Whitlock Group.