FUJITSU

# Case Study
# The College of Engineering at Virginia Tech

»We wanted to provide faculty and students with tools to support active learning and interactivity and saw the Tablet PC as being a key tool in helping us accomplish this goal.«
**Glenda Scales, associate dean for distance learning and computing, The College of Engineering at Virginia Tech.**

### The customer

The College of Engineering at Virginia Tech is internationally recognized for its excellence in engineering and computer science. The college's 7,000 undergraduate and graduate students benefit from a combination of innovative, hands-on courses and state-of-the-art research centers and laboratories.

In 1984, the college was the first public institution in the U.S. to require entering engineering freshmen to own a personal computer. In 2002, the college moved to a laptop requirement and many of its academic buildings were outfitted to offer wireless communication capabilities. Now the college is once again on the technology forefront, becoming the first and largest public college of engineering to require all 1,400 incoming freshmen to purchase Tablet PCs. The college is also working towards equipping all instructors with Tablet PC technology. The Tablet PC of choice? The Fujitsu LIFEBOOK® T-Series convertible Tablet PC.

### The customer

Country: USA
Industry: Education
Students: 7,000
Website: www.eng.vt.edu/

VirginiaTech
*Invent the Future*

### The challenge

Improve its learning environment by finding new ways to present information to students, encourage active participation and creativity in all aspects of the curriculum and improve students' ability to absorb and retain information.

### The solution

Equip faculty and all 1,400 incoming freshman with Tablet PCs and fully integrate Tablet PC technology into the classroom.

### The benefit

- Tablets provided best balance of price, weight, service and screen
- The devices have transformed students from passive note takers to more active and enagaged participants
- Enable creativity in the lessons

### The challenge

College of Engineering at Virginia Tech faculty continuously challenge themselves to improve the college's learning environment. To do so, the team researches new ways to present information to students, encourage active participation and creativity in all aspects of the curriculum, and improve students' ability to absorb and retain information. To facilitate active learning, the College of Engineering turned to Tablet PC technology. The team felt the Tablet PC form factor and pen computing capabilities provided many opportunities for creativity and active learning that were not provided by a traditional notebook computer. Always the technology innovator, the college wanted to help ensure graduating students had the latest technology skills to give them a head start when they hit the workforce.

### The solution

After extensive research and a pilot program, the College of Engineering at Virginia Tech recommended students purchase the Fujitsu LIFEBOOK T-Series convertible Tablet PC, which combines the convenience and familiarity of a notebook with the versatile functionality of a slate Tablet PC. In addition, all instructors of first year students were provided with Fujitsu Tablet PCs to use both inside and outside the classroom. The college is working with faculty members to ensure that they have access to a Fujitsu Tablet PC for teaching. The Fujitsu Tablet PC was chosen for its flexibility, price, weight, and screen size. Explains Scales, *"We selected the Fujitsu LIFEBOOK Tablet PC based on its reliability and flexibility, and Fujitsu's years of corporate experience with Tablet PCs. Fujitsu Tablet PCs also provided the best balance of price, weight, service and screen size."*

Reliability was also especially crucial. "*We require incoming freshmen students to purchase the Tablet PC that they will use for the next four years so reliability and durability are of the utmost importance,*" explains Tom Walker, professor of engineering education at the College of Engineering at Virginia Tech.

Instructors use Fujitsu Tablet PCs to make their lectures more interactive and encourage participation in the classroom. For example, a number of instructors are taking advantage of the portability of the Fujitsu Tablet PC and, using a wireless projector connection, walk around the classroom with their Tablet PCs, interacting with students. While instructors display slide presentations as they did with their notebook computers, the ability to add notes and drawings or simple arrows and circles to emphasize a point has greatly increased the level of student attention in the classroom. "*I can't emphasize enough the advantage of having the ability to mark on the screen when delivering a presentation or a demonstration. It's an exponential improvement in terms of how the students receive the information and changes the dynamic of the classroom incredibly,*" says Walker.

Many instructors post their presentations and notes on their websites. Walker, for example, uses an application to record his voice and everything he presents on his computer screen during his lecture and posts the resulting video file on his website so that students can download and review the lecture and notes again.

The pen computing stylus and digital ink functionality of the Fujitsu Tablet PC has also proven invaluable in helping instructors introduce students to the countless diagrams, drawings and equations that are integral to engineering study. To encourage participation, instructors will ask students to get involved, completing the drawing of a design or solving a problem on their Tablet PC. The instructor can then project both correctly and incorrectly completed diagrams and use the diagrams as powerful, real-time teaching tools. The pen computing capabilities have also proven to be a timesaver for faculty who are required to teach using hundreds of diagrams. Instructors create diagrams in advance of the lecture and use them as a guide that only they can see during the lectures. Instead of drawing a diagram from memory, the instructor will use the pen stylus to trace the existing drawing, while for students it appears that the instructor is creating the drawing from scratch. Because instructors no longer have to commit these diagrams to memory, they are able to concentrate their time on developing more interaction during the lectures.

On the other side of the lectern, students are using Tablet PCs and tools like Microsoft® OneNote® to take notes during the class. Because the notes are in electronic form versus written by hand in a spiral notebook, students are able to search and organize information more easily. "*With the Fujitsu Tablet PC, I have become a much more organized and effective note taker*," says Dan Rizzo, a freshman engineering student.

## The benefit

While the Tablet PC project is still in its infancy, faculty are already seeing improvements in the classroom environment. Students have been transformed from passive note takers to more active and engaged participants. Explains Joe Tront, Professor of Electrical and Computer Engineering, "*We can encourage the 'what if' questions that are so important in engineering education and actually explore those questions in real-time. The portability and flexibility of the Fujitsu Tablet PC is enabling us to get students to actively participate in the learning process, which is fundamental to the active learning style we are trying to encourage.*" Gone is the barrier between instructor and student and distracting keyboard typing noise that faculty says was present when students were using laptops.

In addition, because instructors can make their presentations, written notes and diagrams from class sessions available online, students are able to fully immerse themselves in the lecture, instead of frantically trying to take notes. "*Because both students and instructors are using Tablet PCs, students can spend time looking at what I'm doing, listening and asking questions versus feverishly taking notes. In the end, the student is more active and participatory, which improves learning,*" says Walker.

The College of Engineering faculty who teach first year students believe that Tablet PCs are enabling both students and faculty to be more creative. "*We want to encourage our students to be creative but felt they were being hampered by the standard computer and keyboard. With the Tablet PC and stylus, students can work freely, without the creative limitations found in a traditional computer,*" explains Walker. In a field that is dedicated to finding creative solutions to problems, that is no small accomplishment. In addition, because the Fujitsu Tablet PC is a convertible Tablet PC, students can also use a keyboard like a standard notebook computer when needed, making it an ideal solution for all of their needs. The introduction of Tablet PCs has been such a success at the freshman level that the next phase of the project is to work closely with faculty from other departments to integrate the use of Tablet PCs into upper level courses as well.

## About Fujitsu

Fujitsu America, Inc. is a leading ICT solutions provider for organizations in the U.S., Canada and the Caribbean. It is part of Fujitsu who is the leading Japanese information and communication technology (ICT) company offering a full range of technology products, solutions and services. Approximately 170,000 Fujitsu people support customers in more than 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. For more information, please see http://www.fujitsu.com.