

Thanks in part to their familiarity with AutoCAD Civil 3D, engineering firms are eager to hire our students. They say our graduating students combine strong practical backgrounds with the conceptual knowledge they need to hit the ground running and do very well.

—Brian Smith  
Associate Professor  
University of Virginia

# Building a foundation for success.

AutoCAD® Civil 3D® software gives University of Virginia students tools to compete and succeed in civil engineering careers.



Image courtesy of University of Virginia

## The School

The University of Virginia (U.Va) is one of the nation's foremost institutions of higher education. In fact, according to *U.S. News* magazine, U.Va has ranked either first or second among public universities every year for the past decade.

"Our undergraduate civil engineering program has a particularly strong reputation," says Brian Smith, associate professor of Civil and Environmental Engineering. "We're really focused on applying information technology to civil engineering, and are looking beyond CAD to other methodologies, such as building information modeling (BIM)."

That's why the university's Department of Civil and Environmental Engineering recently integrated AutoCAD Civil 3D software into its curriculum. "My goal is to get the students to move from a drawing-on-paper mindset to a modeling mentality," says Smith. Two factors have played a key role in the success of that effort: the AutoCAD Civil 3D Education Curriculum and free\* student edition downloads of Civil 3D software from the Autodesk Student Engineering and Design Community.

## The Challenge

"Each fall, I teach CE201, Civil Engineering Techniques," says Smith. "It's the first course students take after declaring their majors. It covers engineering graphics, surveying, sustainable design, and economics. Typically, I have almost seventy students."

"When students leave my class, I want them to be able to use Civil 3D software to complete assignments for future classes," says Smith. "That means they have to understand 3D modeling, as well as the overall construction process—from concept, through design, to construction. I also want them to appreciate the time value of money when making engineering decisions."

# Every fall, University of Virginia introduces almost 70 new students to AutoCAD Civil 3D software.

Because few of Smith's students have prior experience with AutoCAD® software, he spends two weeks on the first module of the AutoCAD Civil 3D Education Curriculum to get everyone up to speed. "Then we dive into Civil 3D. We introduce Civil 3D early, so students can use it, as appropriate, in all of their future engineering courses."

## The Solution

The entire AutoCAD Civil 3D Education Curriculum consists of three sections with 17 comprehensive modules that introduce the Civil 3D environment and cover surveying, transportation, and site design.

## Learn on Your Own

"I mostly run that part of the class as a stand-alone tutorial," says Smith. "Our intent is to give the students a chance to teach themselves how to use Civil 3D. I cover the big points in class, but the students essentially do it themselves. They read the AutoCAD Civil 3D Education Curriculum material and complete weekly assignments based on the exercises; we just make sure they understand the material."

## Build Critical Skills

"CE201 is really a foundation course," says Smith. "We use a lot of the early survey pieces from the AutoCAD Civil 3D Education Curriculum, as well as some of the transportation modules. That way, when they get to the upper-level transportation course and need to do horizontal and vertical curves, the students can use Civil 3D to model them."

At the end of the semester, the students complete a final project. "This year, they are conducting a predesign topographic survey, importing the data into Civil 3D, creating a surface model of the site, and then designing a scenic walking path."

## Leverage Valuable Resources

"All of our students are registered at the Autodesk Student Community website," says Smith. "That's been one of the great things in CE201. The students can download fully functional, free\* student versions of Civil 3D to their own computers, and I can use the curriculum straight from the Autodesk website—without any fees."

## The Result

"I've taught CE201 for four years now," says Smith. "We also use Civil 3D extensively in the design course for fourth-year students. Every year, we use it more and more. It definitely helps the students understand the concepts we discuss in class and gives them skills they can use immediately in summer jobs."

## Bright Prospects

"That's really important because roughly 75 percent of our students have summer internships in engineering," says Smith. "Being familiar with Civil 3D really helps them get those positions." Civil 3D also gives students the tools to compete and succeed after graduation. "Engineering firms are eager to hire our students. They say our graduating students combine strong practical backgrounds with the conceptual knowledge they need to hit the ground running and do very well."

To learn more about AutoCAD Civil 3D, visit [www.autodesk.com/civil3d](http://www.autodesk.com/civil3d). Or, download a free\* student version at [www.autodesk.com/edcommunity](http://www.autodesk.com/edcommunity).



Image courtesy of University of Virginia



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AutoCAD Civil 3D makes a lot of sense for us. It gets the students using the dynamic civil model from the get-go. Not doing that is really a disservice to the students. We need to embrace this technology and run with it.

—Brian Smith  
Associate Professor  
University of Virginia