



# SMART CAMPUS

## Learning

### Elevate Higher Education with Smart Campus Learning

A traditional college education has followed the same blueprint for centuries: a professor stands at the front of the class imparting knowledge to a sea of students at fixed desks. There's nothing inherently wrong with this approach. But in a 21st-century world being reshaped by rapid technological change, innovative institutions are asking themselves how they can do more.

How can we create more flexible learning environments to better suit the course material? How can we shift the balance between passive learning and active research and collaboration? How can we bring in new voices from top faculty around the world? How can we open up our most popular courses to more students? How can we empower students to study and learn at more times and places, in more personalized and effective ways?

A growing number of colleges and universities are looking to "Smart Campus" technologies to help answer these questions. They're embracing "hybrid learning" models—integrating physical campus spaces with new digital capabilities, or combing "bricks and clicks"—to free learning from the traditional constraints of space, head count and real-time presence. And increasingly, they're looking to the Internet of Things (IoT)—connecting sensors, devices, cameras, collaboration tools, analytics and digital learning

platforms over a common network infrastructure—to transform campus learning in powerful new ways.

As they do, they're empowering students to become more engaged and successful in their academic programs. And they're making their campuses more attractive to prospective students, top faculty and even research grants.

### Transforming Learning on a Smart Campus

You've probably heard the term "Smart Campus" before, but what does it actually mean? At the highest level, a Smart Campus links devices, applications and people over a common, shared technology infrastructure. When everything is connected, devices and applications can interact with users and with each other in ways that weren't possible before. Institutions can unleash amazing new capabilities to redefine lecture halls, create more flexible and collaborative workspaces, and even redefine learning itself.

## Flexible Learning Spaces

On a Smart Campus, mobile technologies and applications free educators to rethink how they deliver learning. They can repurpose class spaces to fit the lessons—having everyone sit in a circle for a demonstration one minute and breaking up into collaborative workgroups the next. Students and faculty can share or cast the screens of their personal devices easily—without worrying about network or power cabling.

Why stick to traditional lecture hall configurations when you can reconfigure any room on the fly, without losing connectivity to digital tools and curricula? Why stay inside at all when you can move the lecture outdoors? Professors can still lead guided learning for their classes. But now, students can participate from their dorm room, the library, or sitting under a tree out in the quad.



### New Learning Models

Smart Campus technologies can change the way students learn. When every student has nonstop access to audio and video conferencing tools, they can jump on a collaborative working session in seconds. With access to capabilities like screen casting and file- and application-sharing from their personal devices (such as with Google Docs, Office 365, Box, etc.), multiple students can work collaboratively on the same project without having to be in the same physical place.



### Digital Portals

Most colleges and universities are already embracing digital learning management systems (LMS) like Blackboard and Instructure. A Smart Campus provides ubiquitous, rock-solid wired and wireless coverage everywhere, so students can easily access these portals anytime, from any personal device. Grades, assignments, submitting homework, even online assessments—everything is at students' fingertips, whether they're studying in the residence hall or enjoying the sunshine on the quad.



### Virtual Labs

Students studying modern science, engineering, and computer science disciplines need access to heavyweight computational resources. In the past, that meant reserving dedicated time in a lab for a project. On a Smart Campus, that lab doesn't have to be a fixed location. Instead, colleges can virtually spin up cloud resources and deliver them to students wherever they're needed—and spin them back down again when they're no longer in use. And spaces currently reserved for dedicated computing resources can be repurposed for something else.



### Distance Learning

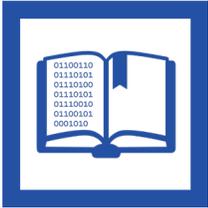
On a Smart Campus, students, faculty and administrators no longer need to worry about space constraints, location or weather. Use video and collaboration tools to open up classes and lectures to more students, without having to squeeze them all into a single lecture hall. When students are ill, when bad weather makes it difficult to get to campus, class can still go on. Students can log into live lectures from their PCs, participate in discussions, download course materials and submit assignments without missing a beat.

For universities themselves, distance learning offers even more possibilities. Grow the institution's reputation (and enrollment) by opening up courses to online attendees through massive open online courses (MOOCs). Expand your reach to students who aren't in a full-time degree program—and give them a taste of the experience you can provide if they enroll on campus. Make life easier for students with physical disabilities who struggle to get to some classes. Expand the roster of superstar lecturers by conferencing in experts in their field from across campus or around the world.



### Lecture Capture

In the same way that Smart Campus technologies free students and faculty from the constraints of physical space, they also afford more flexibility and freedom in time. By recording and archiving all lectures, when an ill student misses class—or just wants to review before a test—every second of every lecture can be streamed with a click of a mouse.



### Library of the Future

When students can research and work productively from anywhere, libraries can be reimagined as multipurpose media centers. The library can still be a place for dedicated research. But now, with conference rooms, quiet rooms, reconfigurable workspaces—even dedicated “maker” spaces—the library becomes a vibrant hub for working collaboratively and engaging with campus life.

A Smart Campus makes all of this possible. And it uses a robust, highly reliable wired and wireless infrastructure in libraries and media centers that can deliver nonstop connectivity to every user, even as the number of users and devices grows much denser than in the past.

## Bringing Campus Data to the Curriculum

All of these Smart Campus experiences can make learning more dynamic, flexible and effective for students and faculty. And all of them are possible right now. As colleges and universities look to the near future, however, and begin to view their digital learning technology infrastructure as a platform for IoT applications, there's another major element of a Smart Campus that can directly impact learning: analytics.

When colleges connect sensors, building systems and other devices (once again, over the same common infrastructure that enables digital learning models and flexible workspaces), they can begin to collect data from a variety of sources across the campus.



All of that data can be used by campus operations teams to pursue the common goals of IoT implementations: reducing energy consumption and power costs, refining services on campus to make them more convenient and effective, and more. However, those data and analytics can also be funneled directly to the classroom.

Students in a variety of courses—public policy, statistics, environmental studies, psychology, mathematics, computer science—now have a wealth of real-world data, drawn from their own campus environment, to study and apply to their projects. All of a sudden, course work that used to be conducted largely in the abstract has concrete, real-world implications for students' own lives and communities.

## REIMAGINING CAMPUS LEARNING

For students and faculty, these kinds of Smart Campus learning applications elevate the academic experience in powerful ways. Students can learn (and professors can teach) in the way that's most effective for them. Faculty can more easily take advantage of the world of information and expertise at their students' fingertips, and help them discover new voices and insights that they never had access to before. Students in a variety of subjects can use data from their own lives and environments to make their course work more relevant, interesting and engaging. And, with ubiquitous mobility and connectivity, students can more easily integrate study and collaborative work into their lives, and reinvest time that otherwise might have been wasted.



At the same time, colleges can use their digital infrastructure to deliver other applications and services that elevate life on campus. Once an institution has linked devices, sensors, applications and analytics over a common infrastructure, they can:

- Enable new Smart Campus lifestyle experiences like wayfinding and location-based services, smart transit and parking, connected lighting and building control systems, and more
- Make the campus safer and more secure with connected surveillance cameras, smart locks and perimeter controls, asset tracking and smart emergency services
- Lower costs by using intelligent electricity, water and building controls to reduce power and water consumption
- Create a greener campus by linking sensors and campus infrastructure systems to conserve electricity and reduce carbon footprint

All of these applications are possible on a Smart Campus—and all of them run on the same common, campus-wide digital infrastructure. (For the full story, see the eBook: Building a Smart Campus: [The Journey Starts Here: smartcampus-ebook](#))

## Trust CommScope on Your Smart Campus Journey

CommScope has been a leader in connecting higher education institutions for many years. Around the globe, college and university IT departments trust CommScope to help them deliver lightning-fast, reliable wireless and wired connectivity everywhere on campus. Now, we're helping higher education leaders build new smart solutions to elevate the academic experience and transform life on their campuses.

We combine industry-leading Wi-Fi innovations with state-of-the-art wired infrastructure and cloud management solutions, advanced analytics, and location-based services that use the campus network to bring intelligence and decision-making closer to users and devices.

## Ruckus Portfolio

 <b>Cloudpath</b> <ul style="list-style-type: none"><li>— Hassle-free, self service on-boarding &amp; pre-boarding</li><li>— Personal networks</li><li>— Manage policy for all devices</li></ul>	 <b>SmartZone</b> <ul style="list-style-type: none"><li>— Easily set up, manage, and troubleshoot the network</li><li>— Campus-level view of the entire infrastructure</li></ul>	 <b>SCI</b> <ul style="list-style-type: none"><li>— Clean actionable insights from thousands of devices</li><li>— Machine learning network intelligence</li></ul>
 <b>Access Points</b> <ul style="list-style-type: none"><li>— Wall-mount AP/switch for residence halls &amp; IPTV</li><li>— Industry's best outdoor APs</li><li>— The best connection to every device</li></ul>	 <b>ICX Switches</b> <ul style="list-style-type: none"><li>— Industry's best performance/value</li><li>— Easy-to-manage campus fabric</li></ul>	 <b>SPoT</b> <ul style="list-style-type: none"><li>— Track assets</li><li>— Target services &amp; information</li><li>— Event management</li></ul>

All of these Ruckus solutions use open APIs, allowing you to easily integrate with devices, applications and management solutions from multiple vendors—or even new solutions created on your own campus. And they're backed by a broad ecosystem of industry-leading IoT partners that deliver ready-to-deploy solutions for advanced analytics, smart lighting, video surveillance, building automation and many other Smart Campus use cases.

## Get Started

The competition in higher education—for students, top faculty, even research grants—will continue to heat up. To succeed, colleges and universities will need to find new ways to engage students in the academic curriculum, expand enrollment and stand out from the crowd. New hybrid learning models, ubiquitous connectivity and collaboration, IoT analytics and other Smart Campus applications can provide powerful capabilities to help them make it happen.

**Ready to start your Smart Campus journey?** Contact your local CommScope account representative or visit [ruckuswireless.com/contact](https://ruckuswireless.com/contact)

See our Smart Campus solution briefs:

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