

# ISTB12 a one-stop shop for robotics, manufacturing

**New facility on the Polytechnic campus will provide a learning and innovation space for students and the community**

By Scott Bordow, ASU News  
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Binil Starly had been a North Carolina State faculty member for nine years when he heard about an opportunity at Arizona State University.

ASU was creating a manufacturing school and as part of the formation was constructing a new building — [ISTB12](#) — that would make the university a leader in training students for the industries of tomorrow.

“That excited me,” Starly said. “How many universities even think about bringing manufacturing front and center as a school, and then investing in faculty and physical infrastructure to back that up? Usually, at other universities, manufacturing is always part of either mechanical engineering or industrial engineering.

“But ASU decided to give it prominence.”

That decision convinced [Starly](#) to become the director of the [School of Manufacturing Systems and Networks](#) in July 2022, and on Friday, the grand opening of ISTB12 was celebrated with an event on the ASU Polytechnic campus, where the building is located.

ASU President Michael Crow said ITSB 12 reflects the university’s commitment to innovation and competition.

“Here in Arizona, we have ways in which we have constructed whole new types of institutions, like this university, whole new ways of working, new ways to partner, new ways to come together, new ways to say, ‘Hey, I think that the United States needs the most advanced manufacturing school ever made.’

“Well, OK, why don’t we figure out how to do that? We’re going to work with the city of Mesa. We’re going to work with the leadership of the state of Arizona. We’re going to work with Honeywell and other companies. We’re going to build this thing. We’re going to attract talent from all over the world, and we’re going to bring it together.”

Arizona Gov. Katie Hobbs credited ASU for the state's success in leveraging the emerging advanced manufacturing industry.

"It's because of this world-class university and its commitment to making sure that Arizona is at the forefront of this new era," Hobbs said. "Your efforts have contributed to research and development, workforce training and job creation. Today marks more than the opening of a building. It is a milestone in our leadership as a hub of advanced manufacturing technology and innovation."

ISTB12 will be the centerpiece of the Polytechnic Innovation Zone, one of nine such ASU zones — eight of which are in Arizona, with the ninth being the ASU Creative Economy Hub in Los Angeles.

The [Innovation Zones](#) are geographic/real-estate portfolios that ASU runs, or is a partner in, with the goal of co-locating private companies, faculty, students and university research infrastructure in spaces that encourage collaboration, commercialization, knowledge spillover and economic development.

Businesses — from startups to global firms — receive access to university labs, shared facilities, student talent and opportunities for applied research and development. Students get exposure to real industry problems, internships, project-based learning and more.

The Polytechnic Innovation Zone specializes in hands-on exploration of solutions in aviation, alternate energy, health solutions, human-technology integration, commercial printing and design services, and digital/additive manufacturing.

Morgan Olsen, ASU's executive vice president, treasurer and chief financial officer, said approximately 330 acres of land will make up the Polytechnic Innovation Zone and be available to foster industry collaboration, translational research and economic development.

"This is a huge opportunity for all of us in the state of Arizona," Olsen said. "Our Innovation Zones offer some really great benefits to businesses who decide to co-locate. We're talking about things like access to labs, high-tech equipment, our makerspaces and, most importantly, our faculty and students. All of that helps create an environment of supportive innovation and growth. And, of course, the companies that locate here are going to have great access to our students with all the tremendous talents they have."

## **Fostering innovation**

The 173,000-gross-square-foot ISTB12 facility consists of three floors and more than 128,000 programmable square feet for office, meeting, instructional, research and collaboration spaces to prepare students to contribute to engineering solutions for societal challenges.

It includes specialty and research labs that will enable faculty and students to work on additive manufacturing, robotics for smart manufacturing and industry automation, cyber manufacturing and operations research, semiconductor manufacturing, and manufacturing systems for the energy sector.

"Think for a moment about the young person in your life who loves to take things apart and put them back together," said Nancy Gonzales, ASU's executive vice president and university provost. "Someone who is more comfortable with their hands than a textbook. Maybe that young person

watches a lot of videos about how things work, tinkers in the garage or stays after school to participate in the high school robotics class.

“They might not think college is for them, or they might not know that college can be this state-of-the-art, high-tech, deeply hands-on and connected to companies that are designing, shaping and building the future in so many areas that affect our everyday lives. ... This is the place where your students’ curiosity meets the world of the possible.”

In addition, ISTB12 has three instructional labs, four classrooms dedicated to the School of Manufacturing Systems and Networks, and an additional classroom that holds 200 people and is set up to be a multipurpose classroom facility for the entire university. The Polytechnic School in the Ira A. Fulton Schools of Engineering also will be housed in the facility.

Starly said ASU Prep Academy students already are using one of the classrooms every Friday to work on robotics-related projects, and that he expects ASU Health deans to walk the space and determine how ASU Health and manufacturing intersect.

“The future of manufacturing is going to be heavily digital, heavily automated, hardware- and software-integrated across all machines and processes,” Starly said. “ISTB12 is a representation of the connection between the manufacturing processes, AI learning, smart automation and smart robotics that represent the future of manufacturing.”

Kyle Squires, dean of the Ira A. Fulton Schools of Engineering, said ISTB12 represents a “significant milestone in the evolution of the Fulton Schools” that began in 2003 with a gift from Ira A. Fulton.

“Today, nearly 33,000 students call Fulton home, and ISTB12 marks that next step under our trajectory,” Squires said. “It’s the new home for our School of Manufacturing Systems and Networks, which is the nation’s first engineering school dedicated to defining that future and what manufacturing will be.”

ASU is the only university in the country that has a bachelor’s degree, master’s degree and a PhD in manufacturing engineering, and ISTB12 serves as a one-stop shop for the future of manufacturing.

“We’re not training students for any particular sector,” Starly said. “We try to pair general manufacturing knowledge with transferable skills catered to the aerospace or microelectronics industries, two big industries out here in Phoenix.

“Beyond a regional sense, there’s medical, pharmaceutical, food processing and consumer products that involve manufacturing in some shape or form, including for the nuclear energy sector. For example, can we rethink the way we design and manufacture nuclear reactor components? What we’re training students for are common core skill sets that will translate to varied manufacturing processes.

“This is why ASU is No. 1 in innovation. It’s not just language or what we put on our banners. We’re designing and actually doing things to make that happen.”

(Video: {<https://www.youtube.com/watch?v=fDcwCNmMpwM>})

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## More about the ISTB12 labs

**Advanced Battery Lab:** Advances next-generation energy storage technologies, including Li-ion, Na-ion, flow and aqueous batteries. These advancements enhance performance, safety and lifespan, directly impacting applications in electric vehicles, grid storage and portable systems.

**Clean Energy Systems Lab:** Provides a plug-and-play environment for developing and testing integrated energy technologies at grid scale. With partnerships across utilities and technology developers, the lab addresses the growing demand for resilient, cost-effective energy solutions, ensuring innovations transition from circuits to real-world systems.

**High Bay Collaborative Space:** Also referred to as the Hybrid and Multi-Material Manufacturing Lab, the School of Manufacturing Systems and Networks' involvement in this space, features industrial robots and advanced additive and subtractive manufacturing technologies. This lab integrates AI and digital twin systems to demonstrate how automation can be applied to aerospace, nuclear and medical device industries, while also serving as a hub for workforce development. The Polytechnic School will explore electric and automated vehicle research, focusing on powertrain optimization, safety control and digital twins of autonomous vehicle driving. Vehicles ranging from mini-scale platforms to a full-size Mustang Mach-E, Jeep Grand Cherokee and Tesla Model 3 support validation, testing and workforce training in both on-road and off-road environments.

**Robotics and Autonomous Systems Lab:** A 5,500-square-foot facility dedicated to research in-ground and aerial robotic systems. Outfitted with advanced sensors, motion tracking and AI integration, the lab enables experimental hardware and software testing across sectors such as agriculture, defense and manufacturing, highlighting ASU's strengths in robotics.

**Reactive Material 3D Printing Lab:** Supports additive manufacturing with metal alloys and ceramics, making it one of the largest dedicated metal 3D-printing facilities in the Southwest. The lab is designed to advance aerospace and medical device applications while attracting regional industry partnerships.

**Materials Testing and Characterization Lab:** Encompasses 5,865 square feet of shared facilities with more than \$1 million in metrology equipment. The labs provide essential support for cross-disciplinary research in biomedical, aerospace and nuclear industries, with tools for microscopy, spectroscopy and thermal analysis.

**Class 10,000 Clean Room:** Consists of 1,200 square feet of Class 10,000 cleanroom space, the only facility of its kind on the Polytechnic campus. This lab supports training for NATCAST's advanced packaging workforce — NATCAST is the designated operator of the National Semiconductor Technology Center and enables research in micro- and nanofabrication processes.

**Micro-Assembly and Packaging Automation Lab:** Provides 4,000 square feet of space dedicated to advanced semiconductor assembly processes such as die attach, wire bonding and encapsulation. Equipped with high-precision measurement tools, this lab bridges the gap between wafer fabrication and functional systems in computing, sensing and communications.

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*This story originally appeared on [ASU News](#).*

## Main image



Students work on a robotics machine inside ISTB12, the newest facility on the Polytechnic campus, which will be dedicated to robotics and manufacturing. Photo by Armand Saavedra/ASU

## Text image(s)





The 173,000-gross-square-foot ISTB12 consists of three floors and more than 128,000 programmable square feet for office, meeting, instructional, research and collaboration spaces to prepare students to contribute to engineering solutions for societal challenges. Photo by Charlie Leight/ASU News

# Fast facts about ASU's new ISTB12 building



## **800,000 feet of data cables**

Enough to stretch from ASU's Tempe campus to the Grand Canyon.



## **35,000 square feet of glass**

Enough to cover about 80% of the White House.



## **790 tons of rebar**

Equals the weight of four fully loaded Boeing 747s.



## **500 days of construction**

Construction crews took nearly 1.4 billion steps, enough to circle Earth 35,000 times.



## **470,000 feet of electrical wire**

Could reach 16 times the height of Mount Everest.



## **43,000 feet of plumbing pipe**

Enough to run from Sun Devil Stadium to the Maricopa County Courthouse.

No caption

## Gallery



Normal, a humanoid robot created at ASU, announces the start of the ribbon-cutting ceremony for the new ISTB12 facility on Oct. 24, at the Polytechnic campus in Mesa.



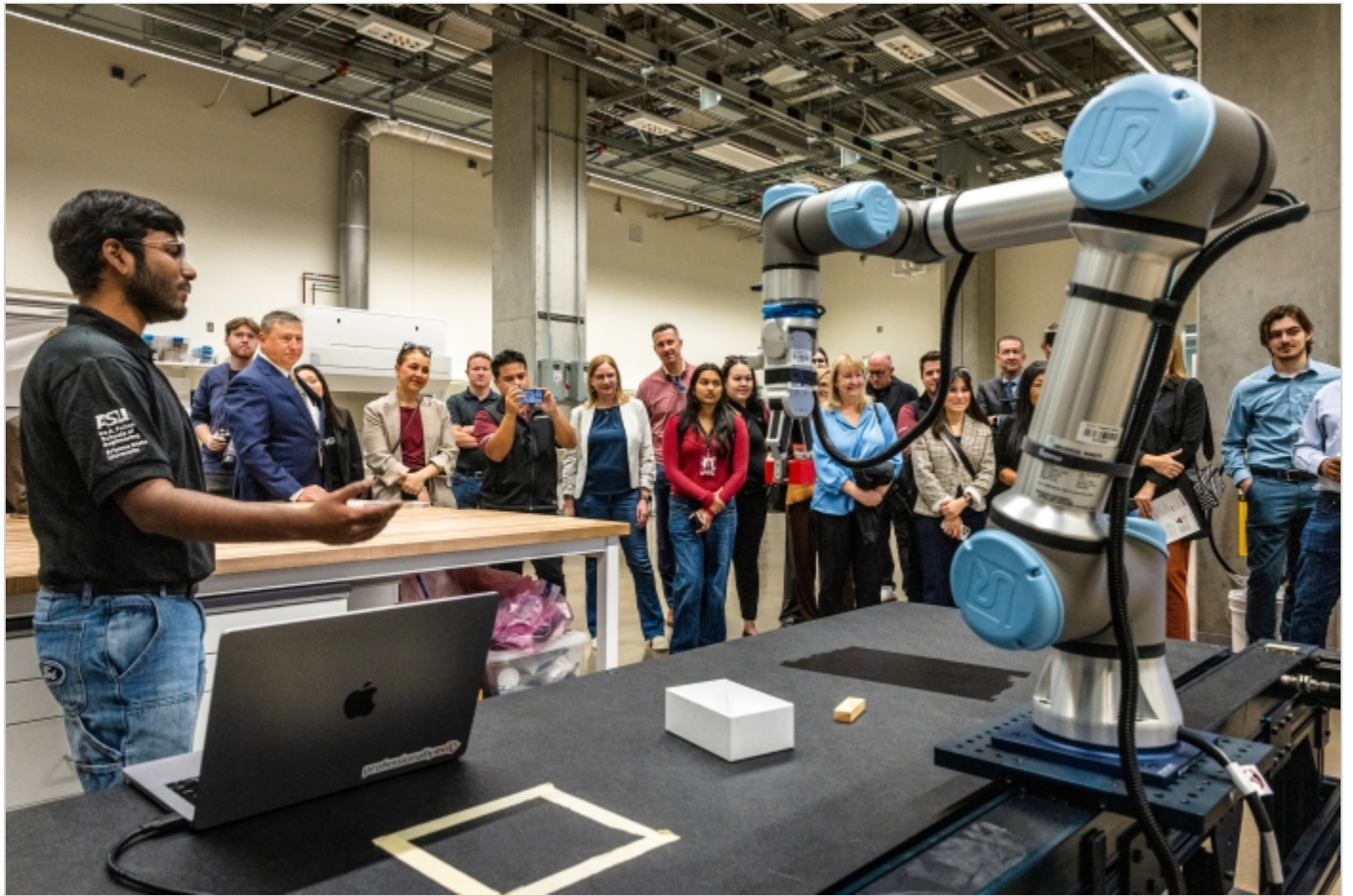


Several hundred industry and community leaders joined ASU faculty, staff and students at the ribbon-cutting ceremony for the new ISTB12 facility on Oct. 24.



ASU President Michael Crow and Arizona Gov. Katie Hobbs (center) join other ASU, industry and community leaders for the ribbon-cutting at the new ISTB12 facility on the Polytechnic campus.





Guests take a tour of the new ISTB12 building Friday and its manufacturing lab space, which is designed as a public/private collaborative research area.



Event guests take a tour of ISTB12's first-floor robotics and autonomous systems lab after the ribbon-cutting ceremony.

## Gallery





The exterior of ISTB12 on the Polytechnic campus.



ASU student Ela Chachulski gets an upclose look at the robotic humanoid Normal in the robotics lab of ISTB12.



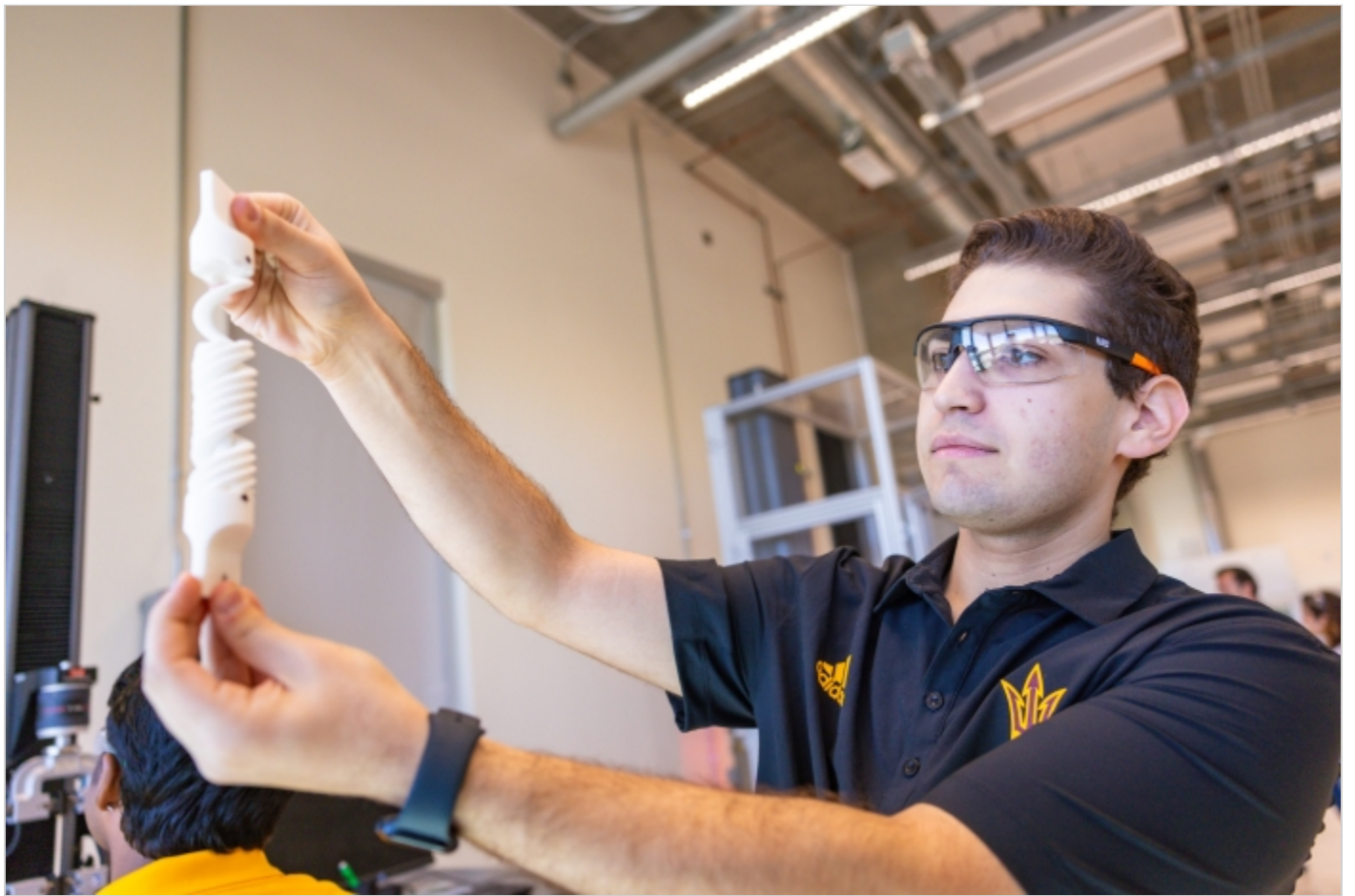
ASU students (from left) Zack Okun, Prajiwal Dutta and Venkat KSE work on a modified Tesla in ISTB12's robotics lab.



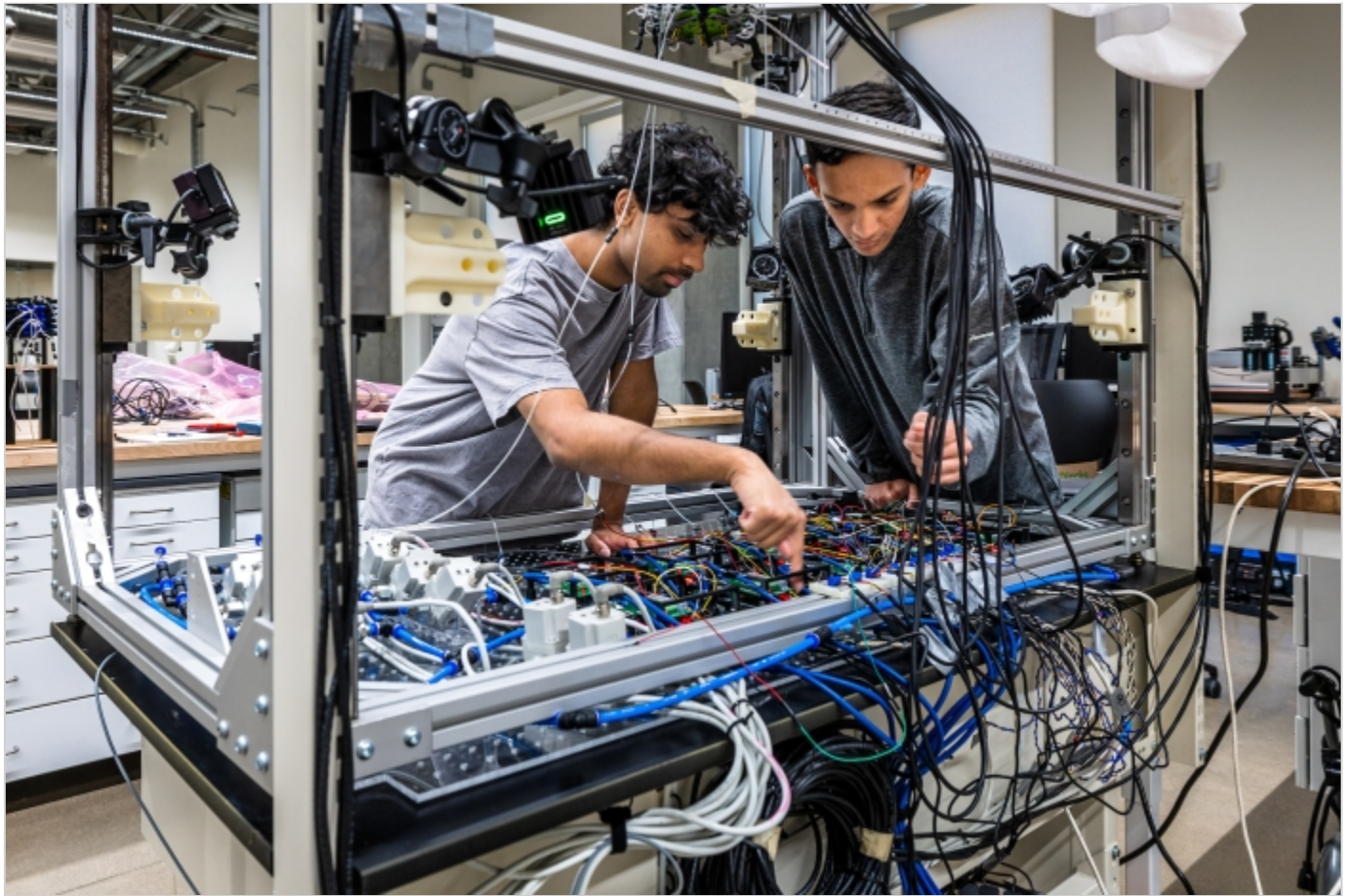


Students Yuliana Robles Lozoya (left) and Aseman Erfani Jazi sit in a dune buggy in the robotics lab at ISTB12.





Student Zack Okun inspects a 3D-printed model inside the new ISTB12 facility on the Polytechnic campus.



Students Raj Kodithyala (left) and Jeevan Hebbal Manjunath work in the first-floor robotics and autonomous systems lab in ISTB12.





Doctoral student Aseman Erfani Jazi works in a cubicle provided for students on the second floor of ISTB12.