ASU-TSMC program propels semiconductor careers

By Aisha Kaddi, ASU News
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More than 100 equipment technician positions are expected to be filled at TSMC Arizona's north Phoenix facilities by the end of 2026. An Arizona State University program, developed and delivered in collaboration with TSMC Arizona, is graduating students who are ready to step into those roles.

The Foundations for Equipment Technician Program creates a faster pathway into semiconductor careers through training aligned with the skills technicians use in advanced manufacturing environments.

By the time the first two cohorts of participants completed the program in late July, many had full-time job offers. Those offers mark an early success for the short-term workforce training program.

ASU's inaugural cohort included participants from a variety of backgrounds, including high school graduates, career changers and job seekers. While their experiences differed, they shared a common goal: developing the technical skills needed to pursue opportunities in semiconductor manufacturing.

For Alyssa Schiele, who joined the first cohort hoping to step into a professional career, the program connected technical training with the work she plans to continue at TSMC.

"This program prepared me for working at TSMC Arizona," Schiele says. "I got to see what I learned in class translate directly to the workforce."

TSMC is a global leader in semiconductor manufacturing, producing the advanced chips that power essential technologies across industries. Its presence in the U.S. supports critical infrastructure, including data centers, telecommunications, transportation, health care technology, defense systems and the electrical grid. TSMC Arizona relies on skilled equipment technicians to support that manufacturing work.

Hands-on training for equipment technician roles

The program combines technical instruction with laboratory experiences that give participants opportunities to apply concepts, troubleshoot problems and gain experience with advanced

semiconductor manufacturing systems.

ASU faculty members provided classroom and hands-on instruction on both the Polytechnic campus and the ASU Chandler Innovation Center.

Throughout the program, participants study core workplace and technical systems, including electronics, sensors, pneumatics, vacuum and gas delivery, control charts, mechatronics and safety practices like personal protective equipment, clean-room gowning and standard operating procedures.

According to Morgan Schofield, a recent graduate of the program, the emphasis on hands-on learning helped turn a longtime interest in technology into preparation for a technical career.

Before enrolling, Schofield spent a little more than a year working on-site at TSMC Arizona as a fire watch lead for Safety Compliance Services. Before that role, he attended college, completed emergency medical technician training and worked in health care as a traveling certified nursing assistant, specializing in care for people with paraplegia and quadriplegia.

Despite his health care background, Schofield has always been interested in technical work. He provided IT and hardware support while working in fire watch and had years of experience building and repairing computers and taking apart consoles, controllers and other electronics.

Joining the program offered a way to build on that experience through formal technical training and a pathway to return to TSMC in a technical role.

“Learning how to actually wire and complete electrical circuits was huge,” Schofield says. “The mechatronics course was awesome; we actually got to learn things that are used in the real world.”

Schiele and Schofield entered the program with different backgrounds and skill sets, but both built technical confidence through the training. Their experiences show how the program can help launch participants into the semiconductor manufacturing field, regardless of previous work experience.

Tyler Hayes, a recent manufacturing engineering graduate from the School of Manufacturing Systems and Networks, part of the Ira A. Fulton Schools of Engineering, supported ASU faculty members during the program’s hands-on lab sessions.

“This was my first time working in a teaching capacity,” Hayes says. “I enjoyed seeing the metaphorical and physical light bulbs go off during my lab sessions with the participants. Seeing them go into troubleshooting mode, address the problem and gain an understanding in the end was what made it all worth it.”

Strengthening Arizona’s semiconductor workforce

Binil Starly, professor and director in the School of Manufacturing Systems and Networks and program director for the equipment technician program, says the program demonstrates how universities can quickly adapt to industry demands while helping build a stronger advanced manufacturing workforce.

“The success of these first cohorts shows how quickly technical learning can translate into a career opportunity,” Starly says. “By combining industry-defined skills, hands-on training and direct employment pathways, we can prepare learners from diverse backgrounds for semiconductor manufacturing careers.”

Following the first two cohorts, ASU plans to offer up to 12 additional cohorts per year through 2028.

The program arrives as TSMC continues investing in advanced manufacturing capacity in Arizona, increasing demand for skilled workers who can operate, troubleshoot and maintain sophisticated semiconductor manufacturing systems.

“Technicians play a vital role in fab operations and are essential to the precision and reliability required in advanced semiconductor manufacturing,” says Rose Castanares, president of TSMC Arizona. “Developing skilled, local talent is critical not only to our long-term growth, but also for strengthening America’s semiconductor ecosystem. We’re proud to partner with ASU to prepare this next generation of talent.”

The collaboration helps address that demand, but the skills participants gain are not limited to positions with one employer. Training in electronics, sensors, pneumatics, vacuum systems, mechatronics, safety and troubleshooting can prepare participants to pursue equipment technician and related roles throughout the Valley’s semiconductor industry.

“We built a custom program for TSMC Arizona, from green light to launch, in eight weeks. That’s the kind of speed and agility industry partners need,” says Grace O’Sullivan, vice president of TSMC Arizona Partnership Initiatives at ASU. “When a company has an urgent workforce gap, ASU can design, activate and deliver a targeted program that turns a need into a talent pipeline in a matter of weeks, not years.”

The participants’ experiences also show what those numbers represent: people with various backgrounds gaining practical skills and a pathway into a growing industry.

As additional cohorts begin training, the first participants leave with hands-on experience, professional certificates and technical skills they can carry into equipment technician and related roles across Arizona’s semiconductor industry.

Program details

The program offers three scheduling options. The ASU-TSMC Equipment Technician Accelerator is a five-week, full-time program that meets Monday through Friday for six to eight hours per day. The Equipment Technician Intensive is a 16-week, part-time program that meets Monday through Thursday for three hours per day. The Equipment Technician Intensive — Saturday is an 18-week program that meets Saturdays for eight to 10 hours per day.

Across the program options, participants receive about 168 hours of hands-on instruction.

Participants who successfully complete the program receive ASU Foundations for Equipment Technician Program professional certificates in Foundations of Electrical Systems for

Semiconductor Equipment, Level 1; Foundations of Pneumatics and Vacuum Systems, Level 2; and Foundations of Mechatronics, Level 2.

The program also prepares participants to complete credentialing examinations offered by the Smart Automation Certification Alliance, or SACA.

ASU faculty members leading instruction include Binil Starly, Cynthia Pickering, Sangram Redkar, Xiangyu Guo, Sean Dengler, Jim Degraffenreid and Jake Okun. Recent 2026 graduate Tyler Hayes, and graduate students Rajesh Aouti and Suha Abu Ghoush also provided instructional support.

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Main image



Graduating students from the ASU-TSMC first cohort ceremony. The inaugural cohort included participants from a variety of backgrounds, including high school graduates, career changers and job seekers. Photo by Aisha Kaddi/ASU