



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

COLLEGE OF
ARCHITECTURE + DESIGN



Fab Lab
archdesign.utk.edu/make

2018-2019

Contributing to downtown Knoxville's urban renewal is the college's 20,000-square-foot Fab Lab, a historic building turned state-of-the-art fabrication facility outfitted with an impressive array of advanced technology.

At a Glance

- Acquired by the college in 2013 and opened one year later, the Fab Lab features two floors of 21st Century technology and is an innovation hub for faculty and students to explore design.
- Equipment and technology include an industry-grade water-jet cutter, 3-axis mill, vacuum former, and CNC routers. Students and faculty also can explore with robotics, 3D printers and a laser cutter as well as a metal shop and woodshop.
- Through rapid prototyping, students' designs move from flat computer screens to models in their hands in mere hours. Students work with many substrates, from foam to plastics and from titanium to aluminum.
- Expert supervisors and well-trained student workers guide students, from first-year to graduate, in learning to operate equipment correctly and safely.
- The Fab Lab hosts numerous workshops, lectures and orientations.
- In 2017, the college established Digital Fabrication Services @ the UT Fab Lab, a design resource available to academic and professional designers across the region. Money raised will fund enhanced technology within the college.

Innovation by the Numbers

- In 2017, students spent 1,000+ hours on the CNC router, up from 330 in 2016.
- Students produced more than 400 projects using the CNC router and water-jet cutter in 2017, up from 300 in 2016.
- More than 230,600 feet of filament were used in 3D printers in 2017, up from 130,000 in 2016.
- In 2018, the college invested \$400,000 to add advanced robotics technology at the Fab Lab.
- Two full-time Fab Lab supervisors and a dozen trained student workers are on hand to teach students how to use the cutting-edge technology.
- The Fab Lab offers 19 industrial- and consumer-grade 3D printers, including an SLA printer that uses a photopolymer resin, UV light, and mirrors to create 3D models.
- The fourth rotational axis on one of the CNC routers transforms the router into a CNC lathe and allows accurate rotation of an object in fractions of degrees.
- Students learn to use multiple software programs to operate the technology in the Fab Lab, including Rhino and RhinoCAM, Cura, Makerbot, Preform, Grasshopper and HAL.
- The total value of equipment in the Fab Lab is close to \$1 million.

Support of the Fab Lab

- The college is fulfilling the \$1.4 million loan obligation for the Fab Lab building.
- Once the loan obligation is fulfilled, the former \$90,000 lease will be converted to student