

State Technical College of Missouri Linn, Missouri

LASER-TEC is the Center for Laser and Fiber Optics Education, founded in 2013 by the National Science Foundation (NSF) and headquartered at Indian River State College in Florida. It was established to help meet the goals of educating and sourcing domestic talent in the areas of optics and photonics. As a service to students, recent graduates, and prospective employers, Photonics Spectra runs a profile of one of the 35 LASER-TEC colleges each month.

State Technical College of Missouri has offered associate degrees and certificate programs in electronics engineering and biomedical engineering technology for over 30 years. Its Associate of Applied Science tracks include degree programs for electronics engineering technology with a specialization in laser photonics, as well as a program for biomedical engineering technology. The college also offers a one-semester certificate course in biomedical equipment technology.

More than 350 technicians have graduated and are working in the electronics, biomedical, laser, and photonics industries across the U.S. and internationally. Companies that have hired graduates of these programs include Garmin, Honeywell Nuclear Security Division, JT3 (formerly Raytheon Tech), GE Biomedical, and the Mercy Hospital system.

Program description

Whether students pursue State Technical College's associate degree programs for electronics engineering technology or biomedical engineering, they will undergo a two-year program that provides them with a strong technical core and hands-on training in state-of-the-art labs stocked with the latest industrial-grade equipment.



State Technical College of Missouri students assemble their final project for the Lasers/Optics course.

During the first year, technicians in both programs receive a solid foundation in electronics and computers. In their second year, the technicians' paths diverge. Electronics engineering technology students study photonics, fiber optics, geometrical optics, laser technologies, and high-end radio-frequency electronic systems. Graduates of this program qualify to work as technicians for industrial production companies — in R&D, national labs, field service, and system repair, among other areas.

Biomedical engineering students learn about diagnostic imaging machines, electrical safety testing, preventative maintenance procedures, and most known medical devices. Graduates of this program qualify as technicians in hospitals, R&D, field service, and third-party system repair shops.

All graduates will learn how to:

- Troubleshoot integrated electronic systems using oscilloscopes, digital multimeters, spectrum analyzers, and beam analyzers during laser applications.

- Tune HeNe and diode lasers for maximum power and beam quality.
- Align optical systems.
- Perform high-quality fusion splicing for single- and multimode fibers.
- Use an optical time domain reflectometer to identify problems in fiber optic links.
- Properly clean and maintain precision optics.
- Document procedures, such as the calibration of optical and fiber optic equipment, the construction of various electronic circuits, and the implementation of a capstone project.
- Apply laser safety rules according to ANSI and OSHA standards.
- Compute or record electronic circuit measurement results.

Electronics engineering technology graduates have the skills to:

- Troubleshoot robotic systems, using knowledge of programmable logic controllers (PLCs), electronics, circuit analysis, mechanics, sensor or feedback systems, hydraulics, and pneumatics.

LASER-TEC college profile

- Disassemble and reassemble electronic devices or peripheral equipment to make repairs, such as replacing defective circuit boards, sensors, controllers, encoders, and servomotors.
- Perform preventive or corrective maintenance on electronic systems or components.
- Maintain service records of electronic equipment or automated systems.
- Install, program, or repair PLCs, robot controllers, and end-of-arm tools.
- Program PLCs using ladder logic on Allen Bradley systems.
- Install, program, or repair Arduino microcontrollers and Raspberry Pi systems.

Biomedical engineering graduates have the skills to:

- Troubleshoot physiological monitoring systems using knowledge of electronics, circuit analysis,

mechanics, sensor or feedback systems, and service reference materials.

- Disassemble and reassemble medical devices to make repairs such as replacing defective circuit boards, sensors, controllers, and fluid flow pump systems.
- Perform preventive or corrective maintenance on physiological devices or components.
- Maintain service records of medical devices and the safety testing of these systems.
- Install, program, or repair medical devices in clinical settings.
- Program network and internet settings of devices for data transfer on hospital networks.
- Manage patient information and data privately and securely for storage and transfer.

How to recruit from this college

If you are interested in recruiting students from State Technical College, please

arrange a visit to our college to present your company and employment opportunities to our students. We will make available, free of charge, a private room in which to interview interested students. Please contact either of the people below to make arrangements for a recruiting visit. Graduates are available every May.

Contact Information

Drew Collins
+1 573-897-5227
drew.collins@statetechmo.edu
Derek Brown
+1 573-897-5184
derek1.brown@statetechmo.edu
1 Technology Drive
Linn, MO 65051

Website

www.statetechmo.edu/programs/industrialtech/eet

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QCL instruments enabling high-speed and sub-micron imaging

Daylight's QCL-based IR imaging systems are enabling the most challenging mid-IR applications with high spectral brightness and industry-leading tuning speeds. Bioimaging and environmental applications, previously impractical given the large volume of data sets, are now possible with high throughput QCL imaging.

160x

higher throughput than FTIR based instruments
(Gerwert et al., 2017)

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0.5μm

spatial resolution
(Cheng et al., 2020)



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our guide
to QCL
sources +

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