

LASER-TEC College Profile

Gallatin College, Montana State University Bozeman, Montana

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.

The state of Montana encompasses one of the densest per capita clusters of optics and photonics institutions in the U.S. To meet the ever-growing workforce demands of this local cluster — and of the nation overall — Gallatin College offers an Associate of Applied Science (AAS) degree in photonics and laser technology to develop highly trained photonics and electro-optics technicians.

Located in Bozeman, Mont., the college complements the four-year programs at Montana State University and ensures access to workforce development that promotes a vibrant local economy. Since its inception in the autumn of 2016, the photonics and laser technology program's four cohorts have graduated a total of 30 technicians. Companies that have hired graduates from the program include LUMIBIRD, Aurora Innovations, Quantum Composers, Elemental Scientific Lasers, and Resonant.

Program description

Students completing Gallatin College's AAS program in photonics and laser technology will understand the scientific principles of electronics, photonics, and advanced manufacturing. This includes a focus on the fundamentals of light and lasers, laser systems and their associated applications, and advanced manufacturing techniques. Graduates will also have an

understanding of AC/DC, solid-state, and digital electronics.

The training prepares students to become technicians in photonics and electro-optics who are capable of working on products or devices used in manufacturing, communications, defense, homeland security, the medical industry, information technology, energy, environmental monitoring, lighting, displays, and entertainment.

A large portion of the electronics and photonics curriculum is hands-on. Students spend a majority of their time working in a laboratory environment,



Students Arise Crawford and LeRoy Verwolf line up an experiment to determine the polarization extinction ratio of a polarizing beamsplitter (left). Student Christopher Long characterizes the properties of a polarizing beamsplitter (below).



applying theoretical knowledge to master the use of relevant test and measurement equipment to construct and troubleshoot advanced electro-optics systems.

Specific knowledge and skills of graduates include:

- The ability to excel as a technician in the electronics, optics, laser, and photonics support fields.
- Overall knowledge in laser systems, electronics, optics, and electro-optics/photonics.
- Knowledge in the fundamentals of light and lasers, including the nature of light, geometric optics, wave optics, optical components, optomechanical components, positioning equipment, the physics of lasers and laser operation, fibers and fiber optics, and overall laser safety.
- Demonstrated knowledge in electronics, including AC/DC electronics,

electronic components, and circuitry, and the ability to maintain and clean equipment and tools required in the fields of optics, lasers, and photonics.

- The ability to analyze, configure, test, measure, troubleshoot, and assist with problems that arise in a professional optics, lasers, and photonics environment.
- The ability to communicate with other professionals about technical ideas, procedures, and results in written, oral, and graphic formats.
- Preparation for a variety of careers in design and manufacturing, materials processing, communications, medical applications, semiconductor fabrication, optical systems, electronics, and military applications.

How to recruit from this college

If you are interested in recruiting students from Gallatin College, please reach out

to our program director or come 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 us to arrange a recruiting visit. Current students are always seeking internship opportunities, and graduates are available every May.

Contact information

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www.gallatin.montana.edu/programs/photonics-laser.html

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