



Stonehill College Easton, Massachusetts

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.

Stonehill College offers three photonics programs: a bachelor's degree, a minor, and a 15-month technician's Certificate in Advanced Manufacturing & Integrated Photonics Program. The certificate program is offered in collaboration with Bridgewater State University (BSU) and AIM Photonics Academy. It features hands-on training with modern equipment, a two-day boot camp at MIT, a capstone experience, and an internship.

Programs

Bachelor's Degree in Photonics

This four-year, interdisciplinary program emphasizes a strong science foundation with hands-on practice on state-of-the-art equipment used in industry. Students complete basic and applied coursework in optics, quantum mechanics, lasers, interferometers, photonics, optical fibers, semiconductor materials and devices, integrated photonics, and waveguides. Students design photonic integrated circuits (PICs), which may be sent to the SUNY Polytechnic Institute cleanroom for fabrication. Graduates with this degree will be well positioned to enter a variety of graduate programs, including the optics M.S. program at the University of Rochester's Institute of Optics, with which Stonehill has a cooperative agreement.

Advanced Manufacturing & Integrated Photonics Certificate

The certificate offers:

- Collaboration with BSU and AIM Photonics Academy.
- Backing by the U.S. Office of Naval Research.
- Part-time, 15-month duration, beginning each May.
- Free, open access to all course material online.

Program courses include:

- Introduction to Advanced Manufacturing and Photonics.
- Electricity and Electronics for Photonics and Optical Technicians.
- Tools and Testing Equipment.
- Tools and Materials for Advanced Manufacturing and Photonics.
- Statistical Process Control in Photonics and Automation.
- Introduction to Optics for Photonics and Optical Technicians.
- Introduction to Fiber Optics for Photonics and Optical Technicians.
- Photonic Integrated Circuits.
- Photonics Capstone.
- Photonics Internship.

Graduates of the certificate program will have the skills to:

- Follow written instructions for manufacturing, troubleshooting, and safety.
- Describe and perform process and control principles for advanced manufacturing techniques.
- Align a laser system and characterize beam modes using modern optical testing equipment.
- Couple fibers in free space and on PICs.
- Describe the theory behind the design and fabrication of integrated circuits.

- Independently troubleshoot equipment.
- Use a variety of precision measurement tools to create and test solutions within photonics.
- Perform basic CNC (computer numerical control) machining and state-relevant safety protocols.
- Explain basic chemical safety in common manufacturing situations.
- Write technical notes for manufacturing or repair and follow instructions and safety guidelines.
- Identify and provide correct safety information on common lasers used in photonics.
- Use modern equipment to handle fiber and characterize losses through fibers.
- Use a probe station to test and characterize PIC performance.
- Communicate design choices to photonics professionals.

How to recruit from this college

Come to our college to present your company and employment opportunities to our students. We will provide, free of charge, a private room in which to interview interested students. Contact Kristine Shatas to make arrangements. Interns and graduates are available every summer.

Contact information

Kristine Shatas
Employer Relations Manager
+1 508-565-1325
kshatas@stonehill.edu
Career Development Center
320 Washington Street
Easton, MA 02357

Program websites

www.stonehill.edu/programs/photonics
www.stonehill.edu/programs/photonics-certificate

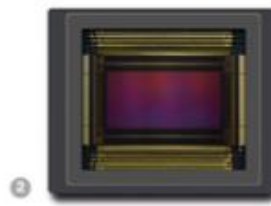


1 Noncontact Laser Sensor

The HP-L-10.10 noncontact laser sensor from **Hexagon Manufacturing Intelligence** is designed for coordinate measuring machines. The scanner offers manufacturers ultrahigh accuracy and inspects almost any surface at maximum speed. The sensor uses cross-platform laser line scanning technology to offer similar repeatability and performance compared to tactile measurements executed on the same machine. Furthermore, it can measure 600,000 individual points per second with a probing form error of 8 µm, rapidly capturing a complete high-resolution digital representation for both surface and detailed feature inspection.
info@hexagon.com

2 Global Shutter Image Sensor

The GSPRINT4510 from **Gpixel** is a high-speed global shutter image sensor that joins the GSPRINT series to target high-speed applications. The 10-MP, 4/3-in. device is designed with a 4.5-µm charge domain global shutter pixel. It achieves more than 30-ke⁻ charge capacity and less than 3-e⁻ rms read noise. Using an advanced 65-nm CIS process with light pipe technology, the sensor achieves >65% quantum efficiency and more than 1/40,000 shutter efficiency. With on-chip charge binning, full-well capacity can be further increased and frame rate is almost quadrupled. The GSPRINT4510 is offered in two variants, one dedicated to 3D laser profiling and the other to high-speed industrial inspection, life science imaging, and 4K video applications.
info@gpixel.com



3 Fiber Optic Splice Closure

The Fiber Optic Splice Closure modular solution from **CommScope Inc.** ensures reliability and versatility across a wide range of connectivity applications and cable types. The dome splice closure offers a modular seal design that leverages NOVUK technology to accommodate a range of applications in fiber-deep installations and deployments. The device speeds up fiber installation and facilitates the servicing and extensibility of connections as operators build their networks. The modular base is composed of eight interchangeable cold-seal segments, offering protection and cable versatility while delivering easy access to individual fibers.
info@commscope.com

4 MicroLens Array Demonstrator

The 1D microlens array from **INGENERIC** is designed for use in optical switches for telecommunications and data center networks. The 1 × 16 microlens array demonstrator helps developers test precision collimator arrays for optical switching architectures in telecommunications and hyperscale data center networks. The demonstrator couples light signals in free space or with an intervening glass spacer in fiber arrays. Reference marks minimize the time required for alignment and preadjustment in optical systems.
info@vip-kommunikation.de

5 Profile Sensor

The S15366-256 profile sensor from **Hamamatsu Photonics** features an embedded computing function for position sensing. The sensor is



6 High-Speed Pyrometer

The CTlaser 4M high-speed pyrometer from **Optics GmbH** features a capture time of 90 µs, an optical resolution of 33:1, and various focus options. An integrated double laser target allows straightforward alignment onto the object over larger measuring distances. It measures within the spectral range of 2.2 to 6 µm, making it ideal for temperature measurements in the range of 0 to 500 °C on metals, metal oxides, and ceramics, or for materials with an unknown or changing emissivity. The measurement head can be used at an ambient temperature of up to 70 °C, and a cooled housing is available for temperatures up to 175 °C.
sales@optics-lr.com

