

LASER-TEC College Profile

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 LASER-TEC colleges each month.

Stonehill College offers three photonics programs: a bachelor's degree, a minor, and a 12-month Photonics Certificate Program in advanced manufacturing and integrated photonics. The certificate program features hands-on training with modern equipment, a field trip to MIT, and an internship — all designed to rapidly prepare students for immediate employment upon completion. Financial assistance is available. Companies for internships and employment have included AccuRounds, Applied NanoFemto Technologies, Dynavac, EMI, Forward Photonics, Instron, IPG Photonics, IQE, Lexitek, MIT Lincoln Laboratory, MKS Instruments, North Easton Machine Co., Optikos, Plymouth Grating Laboratory, Sheauermann Laser, SiPhox, and Tech Etch.

PROGRAMS

Bachelor's degree in photonics

This four-year, interdisciplinary program emphasizes a strong science foundation with hands-on practice using state-of-the-art industry equipment. Students complete basic and applied coursework in optics, quantum mechanics, lasers, interferometers, photonics, optical fibers, semicon-



Professor Ruby Gu, director of the photonics program, demonstrates automatic wire bonder with pull/shear test capability.

ductor materials and devices, integrated photonics, and waveguides. Graduates with this degree are well positioned to enter a variety of graduate programs, including the optics Master of Science program at the University of Rochester's Institute of Optics, with which Stonehill has a cooperative agreement.

Photonics Certificate Program

The certificate in advanced manufacturing, optics, and integrated photonics offers:

- In-person, hands-on training from highly qualified instructors.
- Part-time training for 12 months, beginning each fall semester.

- Free, open access to course material online.
- Twenty-four credits and seven certificates earned, meeting three nights per week.

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.
- Digital fundamentals.
- Statistical process control in photonics and automation.
- Introduction to optics for photonics and optical technicians.
- Introduction to fiber optics.

- Photonic integrated circuits.
- Photonics internship.

Graduates of the certificate program will have the skills to:

- Follow written instructions for manufacturing, troubleshooting, and safety.
- Use basic electronics tools, follow electronics safety protocols, and compute basic electronics values.
- Describe and perform process and control principles for advanced manufacturing techniques.
- Use advanced electronics devices such as oscilloscopes, soldering equipment, and direct current and radio frequency probes.
- Understand the principles of semiconductor manufacturing.
- Align a laser system and characterize beam modes using modern optical testing equipment.
- Couple fibers in free space and on photonic integrated circuits.
- 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.
- Use mathematics as related to machine shop needs.
- Explain cleanroom uses and protocols.
- Troubleshoot basic electronic circuits and wirings.
- Perform basic computer numerical control machining.
- Explain basic chemical safety in common manufacturing situations.
- Write technical notes for manufacturing or repair and follow instructions and safety guidelines.
- Troubleshoot and repair mechanical systems.
- 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 photonic integrated circuit performance.
- Work within a manufacturing or other industry workplace with appropriate interpersonal and teamwork skills.
- 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. A private room will be available free of charge to interview interested students. Contact Cheryl Schnitzer

to arrange a recruiting visit. Interns and graduates are available year-round.

Contact information

Cheryl Schnitzer
Director of Photonics Certificate Program
+1 508-565-1298
photonics-certificate@stonehill.edu
Shields Science Center
320 Washington Street
Easton, MA 02357

Program websites

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

Highest Quality Sapphire Optics

Sapphire custom manufactured to OEM specifications.

Meller Custom Sapphire Optics are ideal for applications requiring a robust lens, window, or dome that transmits from the UV to IR (270 nm to 4.7 μm). Featuring Mohs 9 hardness which is second only to diamond, they can include polished radii to prevent stress, chipping, and cracking along with bevels, chamfers, flats, grooves, holes, radii, steps, and wedges to 6.5° ± 1 min.

Call 1-800-821-0180 for immediate assistance

 Over 100 Years of Excellence
Meller Optics, Inc.

ISO 9001 Registered
melleroptics.com