

LASER-TEC college profile

The Puerto Rico Photonics Institute Barceloneta, Puerto Rico

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 is running profiles of some of the 35 LASER-TEC colleges throughout 2020.

The Puerto Rico Photonics Institute (PRPI) is an initiative of the School of Science, Technology and Environment at the Universidad Ana G. Méndez (UAGM) in San Juan, Puerto Rico. The institute is the only research and academic center in optics and photonics in Puerto Rico and the Caribbean. It is dedicated to education and training, research, outreach, and workforce development for industries in Puerto Rico that use lasers, fiber optics, imaging systems, and other optics and photonics technologies. PRPI's laboratories are part of the business incubator located at the Barceloneta Science Park in the municipality of Barceloneta, about a 30-minute drive west of San Juan. Academic activities are located at the Cupey Campus, just south of San Juan within the metropolitan area.

In addition to the academic program, PRPI conducts a variety of research activities that encompass work in lidar remote sensing for both atmospheric research and, more recently, for hard-target detection and dynamics measurements. Programs also cover photonic inertial sensor research and electromagnetic wave propagation from first principles. More information is available on the institute's website.

Program

PRPI's main program is a two-year Associate in Engineering Technology Degree in Photonics and Lasers. The curriculum aligns with the knowledge, skills, and requirements of local industry. It consists of a general optics course, two laser courses, two electronics courses, a photonics-enabled technologies course, and a fiber optics course. In addition, a course in entrepreneurship and business development is also required. Students receive instruction in the following technologies:

Optical instruments

- Power meters.
- Spectrometers.
- Wavelength meters.
- Spectrum analyzers.
- Beam profiling.
- M² measurement.
- Power vs. current measurements.

Lasers

- HeNe.
- Nd:YAG.
- Semiconductor.
- Fiber.

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- CO₂.
- Argon.
- Laser safety.

Photonics-enabled technologies

- Optical coating design and deposition.
- Laser engraving.
- Optical dimensional metrology.
- Specification and installation of photovoltaic system backup power.
- 3D printing.
- Safety.

Electronics

- National Instruments ELVIS platform.
- Introduction to LabVIEW.
- DC and AC circuits.
- Oscilloscopes.
- Digital multimeters.
- Safety.

Fiber optics

- Theory.
- Safety.
- Overview of fiber optics telecommunications systems.
- Terminations.
- Measurements (power, attenuation, optical time-domain reflectometer or OTDR).
- Inspection, cleaning, and maintenance.
- Splicing.
- FOI (fiber optics installer) certification from ETA International (www.eta-i.org).

Knowledge and skills of graduates

- General optics.
- Lasers.
- Electronics.
- Fiber optics.
- Photonics-enabled technologies.
- Safety.
- Business management.

How to recruit from this college

Industries can meet our students at the annual jobs fair at our university, usually held in March. To be notified about this event, companies can contact PRPI's



PRPI student Marcos Santini splices an optical fiber damaged during Hurricane Maria.

Employment Center (Centro de Empleo) at +1 787-766-1717, ext. 6524, or centroempcepey@uagm.edu.

In addition, PRPI faculty maintain contact with graduates and provide notifications of employment opportunities. Companies can contact PRPI directly at the email addresses below. Companies are also welcome to invite students for information and interview sessions. PRPI works with local companies to perform mock interview sessions to help prepare students for job hunting.

Students graduate in early June and prospective graduates complete spring coursework by mid-May. Some start work part-time before graduation.

Contact information

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