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Baker College receives NSF grant to boost Michigan's photonics education

Getting photonics into mainstream education will help communicate opportunity of entry into burgeoning high-tech field with associate degree

FLINT TOWNSHIP, Mich. – Baker College has been awarded a National Science Foundation (NSF) grant of nearly \$512,000 to advance photonics and laser education at Baker College and in Michigan through June 2020.

The goal, according to Anca Sala, Ph.D., Baker College dean of the College of Engineering, is to educate more students to become qualified photonics, laser and fiber optics technicians to meet industry need – in southeast Michigan and nationally.

The NSF grant supports development of curricula for educational institutions, expands Baker College's photonics laboratory at the Flint Township campus, establishes laboratories at Baker College campuses in Auburn Hills and Jackson, and enables multiple information sharing events that involve educators, manufacturers and employers.

"We are working to get photonics – the science and technology of light – into the mainstream of science and technical education at all levels," Sala said. "This will draw more young people into the field early on. The Baker College photonics and laser technology associate program allows students to enter the rapidly growing and well-paid field of photonics with low education expenses."

Starting salaries for graduates of two-year photonics programs range from \$40,000 to \$50,000, according to OP-TEC, The National Center for Optics and Photonics

Education. It's not unusual for recent graduates to have multiple job offers. OP-TEC, funded by the NSF, works to increase the number of qualified photonics technicians in the U.S. by building and strengthening two-year photonics programs.

"Scientists discover, engineers design, and technicians are the geniuses in the laboratory and masters of the equipment," is how Dan Hull, OP-TEC executive director, relates the job of a photonics technician to others in the field.

Photonics education expansion in Michigan

The NSF grant allows Baker College to add the photonics and laser technology program to rosters at the Auburn Hills and Jackson campuses. It's now offered at the Flint Township campus. New course modules will focus on photonics applications in emerging areas such as autonomous driving, integrated photonics and high-power lasers in manufacturing.

Photonics curriculum will be shared with other higher education institutions and K-12 educators as well as NSF Advanced Technological Education Centers located throughout the country. Important goals of the grant are to introduce photonics as a field of study in Michigan Career and Technical Education programs, develop pathways from high school to two- and four-year degree programs, and showcase available career opportunities.

Annual photonics symposiums are on tap, beginning early 2018, as well as workshops to introduce photonics to K-12 teachers and faculty at higher education institutions.

Sala said information sharing is extremely important, especially for students, parents, teachers and career guidance counselors, and groups such as veterans and displaced workers with industry and business potential.

"When those who are considering careers realize photonics are in numerous everyday technologies like cellular networks, flat-screen TVs and fiber-optic communications, I believe interest in these degrees will increase," Sala said.

Photonics Phridays

To introduce middle and high school students, teachers and parents to the new science of photonics and lasers, Sala will be holding 'Photonics Phriday' events at Baker

College's Flint Township campus throughout the academic year. They will include a lab tour, age-appropriate demonstrations, simple experiments and fun, hands-on activities that illustrate the magic of photonics.

Strong demand for photonics technicians

Baker College received a previous NSF grant of approximately \$200,000 in 2013 to help establish the photonics and laser technology associate program at the Flint Township campus. The program was the first in the state and one of a handful in the country. All graduates of the program have found rewarding employment with photonics companies in the state, and the companies are looking for more graduates to hire.

The Baker College program was in response to the urgent need for trained photonics technicians by employers. There were jobs in southeast Michigan that went unfilled. The need is still great. A 2016 Department of Labor O*NET report estimates 17,100 photonics, laser and fiber optics technicians will be needed between 2014 and 2024. That's 1,710 per year, yet today two-year programs produce fewer than 400 qualified graduates annually, according to OP-TEC.

"Expanding photonics education is critical to Michigan's manufacturing as well as health care, national security and defense, and other sectors," Sala said. "Photonics and lasers are literally the cutting edge of science and technology in most everything."

Sala encourages anyone interested in the associate degree program or about upcoming photonics and laser events to contact her, at 810.766.4111 or anca.sala@baker.edu, or Kevin Pnacek in the admissions office, at 810.766.4000 or kevin.pnacek@baker.edu. Information about the photonics and laser technology program is at www.baker.edu.

The largest private college in Michigan, Baker College is a not-for-profit higher education institution accredited by the Higher Learning Commission. Founded in 1911, Baker College grants doctoral, master's, bachelor's and associate degrees, as well as certificates in diverse academic fields including applied technology, business, education, engineering, health science, information technology and social science. Baker College has on-ground campuses throughout Michigan and offers online programs that can be

completed 100 percent online without ever visiting a campus. In 2016, the Online Learning Consortium recognized Baker College Online with the OLC Quality Scorecard Exemplary Endorsement, the highest ranking for online higher education programs. For information, visit www.baker.edu or follow Baker College on Twitter, @bakercollege, or on Facebook, www.facebook.com/bakercollege.

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Photo captions

Baker1-Photonics Lab.jpg – Baker College students Riley Ragsdale, of Clio, Richard Rogers, of Hartland, and Brian Heilner, of Fenton, perform an experiment on the diffraction of monochromatic light in the college’s optics and photonics lab.

Baker2-Mi-LightMTG.jpg – State photonics industry leaders tour Baker College’s optics and photonics lab during the 2017 annual meeting of Mi-Light, held on the Flint Township campus. Members of Mi-Light, the Michigan photonics cluster, are manufacturers, educators and others who work to grow the state’s talent pool to expand the photonics industry and stimulate innovation.

Baker3 Flint-photonics.jpg – The Baker College photonics and laser technology associate program prepares students for careers as photonics technicians who build, test, modify, install, operate, calibrate, maintain and repair laser and electro-optic devices and systems.