

# Optics Anniversary: Online Certificate Program Turns 10

BY KATHY SEATON TAM UNIVERSITY OF CALIFORNIA, IRVINE DIVISION OF CONTINUING EDUCATION

**T**en years ago, the University of California, Irvine, Division of Continuing Education (UCI DCE) saw that the market was in need of skilled optical engineers and created a certificate program that would flexibly and affordably meet the needs of workers and employers.

Back in 2009, Donn Silberman, along with a committee of industry experts, developed a first-of-its-kind online Optical Engineering Certificate program. The UCI DCE was lucky to have Silberman make a significant contribution to the curriculum. His passion for optics started in 1976 when he was an astronomy student volunteer in high school. He would spend the next 40 years researching, developing, designing, manufacturing, and managing various optics-based businesses, with a number of patents and publications to his credit.

The initial optical engineering program supported by Silberman and the committee evolved quickly into two programs — the original certificate program plus an Optical Instrument Design program. The Optical Engineering Certificate focused on the design and engineering of optical components and systems. The Optical Instrument Design certificate focused more on optomechanical component design and optical instrument design.

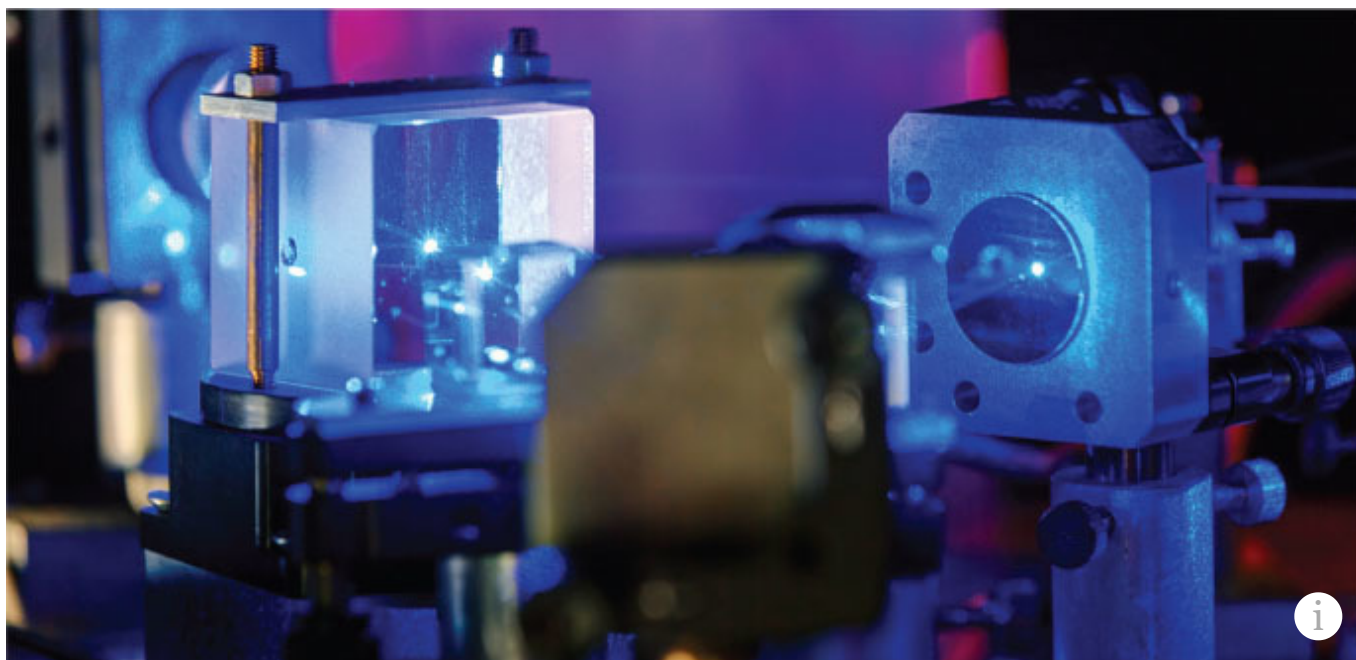
Each program sought (and still seeks) students with backgrounds in engineering, such as electrical or mechanical, or in physical sciences, such as physics or biology. The programs strategically give students the tools to integrate optical and optomechanical components into their systems. The programs share elective courses that include introductions to lasers, fiber optics, radiometry, and vibration control.

Courses are taught by experienced industry-leading professionals, many with advanced degrees in optical sciences from institutions such as the University of Arizona. Graduates are employed by leading optics companies such as Edmund Optics, Newport/MKS, KLA-Tencor, and Luminit. The instructors and the program's advisory board provide a substantial network for students to access as they seek to advance their careers.

Pedagogically, two online programs have proven to be the right move. The delivery method is completely supported by the university's instructors, the UCI DCE staff, and its online infrastructure. Online instruction has enabled students to complete the program quickly, more efficiently, and in a cost-effective manner. After moving the programs to a completely online format in 2011, UCI DCE class sizes increased on average from 16 to 22 face-to-face enrollments to 17 to 33 online enrollments.

The optics programs take about a year and half to complete, as most students work full time and take one course per quarter. Between the two optics programs, the UCI DCE has had 75 graduates and currently has 27 candidates.

Student outcomes of the online programs have been very promising. Graduates are now working for companies such as Facebook, the National Solar Observatory, Illumina, Signify, MEI Systems, Hedgefog Research Inc., L3 Technologies, Nanometrics, California Air Resources, Navitar Inc., General Atomics, Tower-Jazz, and Christie Digital.



Academia, industry, and government are researching how optics and photonics have implications in quantum computing, and these trending topics are anticipated to be incorporated into the UCI DCE online curriculum.

Now, at the program's 10-year mark, the UCI DCE has a viable, scalable, and sustainable curriculum to meet the needs of its students. The flexibility and affordability of the certificate creates a win-win situation. It serves the needs of those (with prior science background) who need to enter the technical workforce quickly. And it meets the needs of employers urgently seeking skilled and credentialed technicians.

"It's so exciting to see the groundbreaking work that companies are doing," Silberman said. "I'm inspired by the global attention to optics and photonics and by the sheer amount of young people and students that have the ability to make a difference and create change."

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## **Meet the author**

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