

## Education program for photonics professionals (EP3)

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**Abstract:** The University of Waterloo, partnered with key industry players, Photonics Research Ontario and the Ontario government, has launched Ontario's first diploma-level photonics program to re-skill scientists and engineers. The Education Program for Photonics Professionals (EP3) offers the basics of a university level Optics education, but in a manageable timeframe and format for the working professional.

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The rapid growth of the photonics sector in the last decade far outpaced the ability of education and training providers to produce graduates with critical skills in photonics. The Ontario education system has begun to respond to this pressure by offering new photonics education programs at all levels from grade school through to community colleges and universities. However, producing new graduates is only part of the solution. Because of the past lack of specialized optics and photonics programs, existing scientists and engineers need to be re-skilled. To address this gap, in April 2002, the University of Waterloo introduced the Education Program for Photonics Professionals, or EP3.

The curriculum of EP3 is driven by a broad-based analysis of industry's needs, and tailored with the support of EP3's Industrial Advisory Board. Currently, EP3 is a series of six courses; Introduction to Optics, Physical Optics, Optical Design, Radiometry and Photometry, Lasers and Electro-optics and Optical Communications. In addition to these courses there are two laboratory sessions that will be held on week-ends following the third and sixth courses. Each laboratory session is a series of six labs covering the topics of the preceding three courses.

EP3 will maintain a high academic standard. Each course is eight weeks long, consisting of 3 lecture hours per week along with graded homework assignments. Each course has a mandatory, proctored final examination; students must receive a minimum mark on the examination to pass the course. Students successfully completing each course will receive a certificate; students successfully completing all six courses and the two laboratory sessions will receive a diploma. Certificates and diplomas will be issued by the Faculty of Science of the University of Waterloo. Graduates of EP3 become alumni of the University of Waterloo.

EP3 has received critical funding from the Ontario government's Ministry of Enterprise, Opportunity and Innovation (MEOI) to develop the courses and laboratories, along with other start-up costs. A number of local industries are supporting the program both through participation in our Industrial Advisory Board and donations of equipment. Also we will receive a large equipment donation through our membership in a recently formed organization, Ontario Photonics Education and Training Association (OPETA).

EP3 is managed by the EPSTAR team at the University of Waterloo. EPSTAR has a strong track record in managing self-sustaining professional education diplomas. Notably, EPSTAR's flagship program, EPSP (the Education Program for Software Professionals) has re-skilled more than five hundred professionals since its inception in 1996. The program has been recognized as a model for delivering professional education by other departments at the University of Waterloo and by other institutions; EP3 is designed on this model.