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Global Directory of Programs in Optics and Photonics

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2020 SPIE SCHOLARSHIP WINNERS

SPIE awarded $298,000 in optics and photonics education scholarships to 78 outstanding individuals, based on their potential contribution to optics and photonics, or a related discipline.

Through 2019, SPIE has distributed over $6 million dollars in individual scholarships. This ambitious effort reflects the Society’s commitment to education and to the next generation of optical scientists and engineers around the world. Individual awards range from $3,000 to $11,000.

SPIE scholarships are open to students studying anywhere in the world. High school (pre-university/secondary school) and 1st/2nd year post-secondary, undergraduate, and graduate students are encouraged to apply.

The SPIE D.J. Lovell Scholarship was awarded to Jonathan Pinnell, University of the Witwatersrand, Johannesburg (South Africa).

The Laser Technology, Engineering and Applications Scholarship was awarded to Gehrig Carlse, York University (Canada).

Daniel Louie, The University of British Columbia (Canada), was awarded the John Kiel Scholarship.

David Lippman, The Institute of Optics, University of Rochester (United States), was awarded the Optical Design and Engineering Scholarship.

Yonghuan David Ren, University of California, Berkeley (United States), was awarded the BACUS Scholarship.

Deesha Shah, Purdue University (United States), was awarded the Teddi Laurin Scholarship. This scholarship is in memory of Laurin Publishing and Photonics Media founder Teddi Laurin.

Brandon Hellman, James C. Wyant College of Optical Sciences, University of Arizona, was awarded the 2020 Michael Kidger Memorial Scholarship in Optical Design. This scholarship is supported by the Michael Kidger Memorial Scholarship Fund in memory of Michael John Kidger, a well-respected educator, design software developer and member of the optical science and engineering community. For more information, visit www.kidger.com.

For more information on SPIE’s scholarship program, a complete list of 2020 scholarship winners, and the criteria used by the SPIE Scholarship Committee in selecting recipients, visit spie.org/scholarships.

COMMUNITY SUPPORT

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In 2019, SPIE provided over $5.6 million in community support including scholarships and awards, outreach and advocacy programs, travel grants, public policy, and educational and career development resources.

We are an educational, not-for-profit organization that contributes significant funds, every month, every year, without a separate fundraising campaign or administrative foundation.

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2020/2021
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Contact Melissa Valum for information on how to become a supporter of the Optics and Photonics Education Directory
Tel: +1 360 685 5596 • Email: melissav@spie.org

Cover photos provided by The Institute of Photonic Sciences (ICFO), Bridgewater State University and McMaster University
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CANADA

Niagara College of Applied Arts and Technology
Welland, Ontario Canada

Niagara College’s photonics programs have received substantial industry and government support as part of a province-wide plan to improve photonics education. Industry supporters have interest areas ranging from telecommunications, defense, aerospace, sensing, component and system manufacture, and biomedical imaging systems. We offer a highly practical investigation based program with extensive coverage of real-world photonics applications.

Name of department: Technology
Number of core optics/photonics students currently enrolled in a related program: 60
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 1
Optics/photonics related programs/degrees offered: Associate degree(s): Photonics Engineering Technology Diploma (3 year); Photonics Engineering Technician Diploma (2 year)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Our courses cover a wide breadth of photonics theory and application. Our programs merge electro-optical, optomechanical, precision optics, and laser technologies. Our facilities are equipped with a Class IV laser lab, precision optics manufacturing lab, laser machining and additive manufacturing lab space, teaching cleanrooms for thin-film coating deposition, and a photonics flex space which includes student stations with optical tables, fiber optic test instrumentation, and electronic test instrumentation.

Admission deadlines: Please contact the registrar’s department for details of application procedures, deadlines and our fees schedule.
Year program was founded: 2001
Contact: Alexander McGlashan, Coordinator
Email: amcglashan@niagaracollege.ca
Website: http://www.niagaracollege.ca
Mailing address: Niagara College, 100 Niagara College Blvd., Welland ON L3C 7L3 Canada

UNIVERSITY OF CALIFORNIA IRRVINE
Irvine, California USA

An increasing amount of today’s consumer, industrial and business products incorporate optical and optomechanical systems. These systems are essential to virtually every industry including; defense, medical, clean energy, nanotechnology, automotive, electronics, communications, entertainment, computers and consumer products. The Optical Engineering and Optical Instrument Design Certificate. Programs address the growing demand for skilled professionals who can conceptualize, design and manufacture these optical and optomechanical components, systems and instruments. Program attendees will gain specific skills which can be applied immediately within their organizations.

Name of department: Division of Continuing Education
Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 14
Optics/photonics related programs/degrees offered: Certification: Optical Engineering and Optical Instrument Design
Type/Description of disciplines/program tracks offered: Optical engineering
Admission deadlines: http://ce.uci.edu/areas/engineering/optical_engineering/
Contact: Kadie Heck
Email: kheck1@uci.edu
Website: http://ce.uci.edu/
Mailing address: 510 E. Peltason Dr., Irvine CA 92697 USA

UNITED STATES AND US TERRITORIES

CALIFORNIA

San Jose City College
San Jose, California USA

The Laser Technology program at San Jose City College (SJCC) has been able to maintain its vitality and relevance by ensuring that students learn what employers need. The program was designed, and is continuously being updated, in conjunction with the Laser Electro-Optics Manufacturers Association (LEOMA), http://www.leoma.com. Emphasis is placed on both theory and hands-on skills for technicians are the vital link between engineers’ “blueprints” and their real-world implementations. Trainees learn how to install, operate, maintain, and modify laser/electro-optic systems.

Name of department: Laser Technology
Number of core optics/photonics students currently enrolled in a related program: 30
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: Certification: Certificate in Laser Technology. Associate degree(s): Associate Degree in Laser Technology
Type/Description of disciplines/program tracks offered: Optics; Laser Manufacturing and Testing
Academic and research specialties related to optics/photonics: Students work with lamp- and laser diode-pumped solid state and fiber lasers, state-of-the-art transverse and longitudinal laser beam analyzers and lens design software.
Year program was founded: 1970
Contact: Dr. Sydney Sukuta, Professor
Email: sydney.sukuta@sjcc.edu

Website: http://www.sjcc.edu/academics/departments-divisions/laser-technology
Mailing address: Laser Technology, San Jose CA 95128-2799 USA

FLORIDA

Indian River State College
Fort Pierce, Florida USA

A two year, Associate in Science degree program, educating photonics and robotics technicians to the highest industrial standards, using state of the art equipment and facilities. The first year provides a strong foundation in basic photonics, electronics and electromechanical systems. In the second year we concentrate in 1) robotics/automation using the Allen Bradley PLC’s, and Fanuc robots, and 2) Lasers, Fiber Optics, Photonics Applications with hands on labs with Nd:YAG, CO2, HeNe, and semiconductor lasers, geometrical optics, and fiber optics utilizing the latest fusion splicers, and OTDRs. Extensive knowledge and experience is gained in computer skills: circuit simulation, schematic and pcb design, dld design, word processing and spread sheet design with Microsoft Word and Excel. A graduate of this program is able and ready to install, repair and maintain today’s complex electro-optical systems.

Name of department: Electronics Engineering Technology
Number of core optics/photonics students currently enrolled in a related program: 64
Number of students in optics/photonics related course work: 223
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: Certification:
- LASERS AND PHOTONICS - 12 CREDITS. This program will prepare you for employment as an entry level technician for a photonics related company. After completing this certificate you can also transfer all the credit towards an AS degree in Electronics Engineering Technology.

MAJOR FIELD REQUIRED COURSES - 12 credits
- EET 1015C DC Circuits 3 credits
- EET 1025C AC Circuits 3 credits
- EST 2210 Intro. to Photonics 3 credits
- EST 2215 Geometrical Optics 3 credits

Associate degree(s): Electronics Engineering Technology - 68 credits:
- Associate In Science Degree. Lasers, fiber-optics, robotics, automation, wireless networks, biomedical equipment, space exploration, and modern electric power generation are cutting-edge technologies made possible by electronic engineering. The demand for technicians in these fields is at an all time high. Starting salaries for entry-level technicians in any of these fields are higher than the national average. The Electronics Engineering Technology degree offers specialization options in lasers and photonics, robotics and industrial automation, power plant technology, computer technology, and telecommunications. Industry classes are taught at the Kight Center for Emerging Technologies, with state-of-the-art equipment and instrumentation.

Academic and research specialties related to optics/photonics: Fiber Optics, Solar Energy

Accreditation Program: Southern Association of Colleges and Schools Commission on Colleges

Accreditation Organization: Southern Association of Colleges and Schools

Admission deadlines: Applications for day time cohort studies must be received by the end of June.

Year program was founded: 2004

Contact: Dr. Mo Hasanovic, Assistant Professor, Electronics Engineering Technology, Indian River State College, Main Campus, V443D, Fort Pierce, Florida USA
Email: mhasanov@irsc.edu
Contact: Dr. Chrys A. Panayiotou, Professor and Chairman
Email: cpanayio@irsc.edu

Mailing address: 3209 Virginia Avenue, Fort Pierce FL 34981 USA

IOWA

Indian Hills Community College
Ottumwa, Iowa USA

The IHCC Laser & Optics Technology coursework, consisting of over 80 credit hours, is one of the premier photonics programs in the U.S. To complement cutting edge course content, students receive many valuable hours of hands-on training. Graduates of the program accept positions throughout the U.S. and other countries; in many different industries (research facilities, military contractors, industrial, medical, telecommunications, national labs, etc.). Each year, over 30 employers contact and/or visit IHCC giving our students the opportunity to select from hundreds of employment positions.

Name of department: Laser & Optics Technology

Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 10

Optics/photonics related programs/degrees offered: Associate degree(s):
- AAS - Associate in Applied Science in Photonics, laser or fiber optic technology

Type/Description of disciplines/program tracks offered:
- Photonics; Fiber optics


Year program was founded: 1985
Contact: Michael Shay, Instructor
Email: michael.shay@indianhills.edu
Website: http://www.indianhills.edu
Mailing address: 626 Indian Hills Drive, Ottumwa IA 52501 USA

NEW JERSEY

Camden County College
Blackwood, New Jersey USA

All students enrolled are required to take core courses in Introductions to Photonics and Photonics Safety, comprehensive Optics course, Photonics Measurements, and Electrical and Electronic Principles. Students take courses in Fiber-optics and advanced fiber-optic communications and Installation. Students in the AAS Laser Technology program take Photonics Materials, Electronics I and II, Pulsed and CW Lasers, and Photonics & Electro-Optic Devices.

Name of department: Photonics

Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 10

Optics/photonics related programs/degrees offered: Associate degree(s):
- AAS - Associate in Applied Science in Photonics, laser or fiber optic technology

Type/Description of disciplines/program tracks offered:
- Photonics; Fiber optics

Academic and research specialties related to optics/photonics: Laser Technicians - service, calibrate, repair, align different kinds of lasers (medical, industrial, etc.) and accompanying equipment. Fiber Optic Technicians - install, test, troubleshoot, maintain fiber optic cables and sensors and accompanying equipment for telecommunications and medical/technical applications. Fiber Optic Certified Installation Specialists - install, maintain and troubleshoot optical networks.

Year program was founded: 1976
Contact: Lawrence Chatman, Ed.D., Professor & Coordinator, Engineering Programs
Email: lchatman@camdencc.edu
Website: http://www.camdencc.edu/departments/photonics/
Mailing address: Camden County College, Photonics Dept., PO Box 200, Blackwood NJ 08012 USA

IDAHO

Idaho State University
Pocatello, Idaho USA

This is an Associate degree program. Hands-on experience is a large part of the course. There is a core electronics curriculum that is the first two semesters. Content of the course is diversified across the photonics industry.

Name of department: Robotics and Communications Systems Engineering Technology

Number of core optics/photonics students currently enrolled in a related program: 15
Number of students in optics/photonics related course work: 3

Optics/photonics related programs/degrees offered: Certification:
- Advanced Technical Certificate: Laser/Electro-Optics Technology

Associate of Applied Science: Laser/Electro-Optics Technology

Type/Description of disciplines/program tracks offered:
- Photonics; Fiber optics

Year program was founded: 1976
Contact: Dr. Randy Norton, Assistant Professor
Email: rnotrond@isu.edu
Website: http://isu.edu/ctech/robotics/
Mailing address: Idaho State University, College of Technology, 921 S 8th Ave Stop 8380, Pocatello ID 83209-8380 USA
NEW YORK

Monroe Community College  
Rochester, New York USA

Name of department: Optical Systems Technology
Number of core optics/photronics students currently enrolled in a related program: 70
Number of students in optics/photronics related course work: 160
Number of optics/photronics related courses offered in this program: 12
Optics/photronics related programs/degrees offered: Certification: Optical Systems Technology
Associate degree(s): AAS Optical Systems Technology; AAS Traditional Optics; AAS Electro-Optics (Photonics)
Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics

Academic and research specialties related to optics/photronics: Advanced Optical Manufacturing
Admission deadlines: New students and students applying for readmission should contact the Admissions Office at admission@monroecc.edu or (585) 292-2200.
Year program was founded: 1963
Contact: Dr. Alexis Vogt, Endowed Chair & Associate Professor, Optical Systems Technology
Email: optics@monroecc.edu
Website: https://www.monroecc.edu/go/ost
Mailing address: Monroe Community College, Optical Systems Technology, 1000 E. Henrietta Rd., Rochester NY 14623 USA

PUERTO RICO

Universidad Ana G. Mendez  
San Juan, Puerto Rico USA

PRPI is the only program in Puerto Rico and the Caribbean to specialize in education and research in optics and photonics.
Name of department: School of Science, Technology and Environment
Number of core optics/photronics students currently enrolled in a related program: 4
Number of students in optics/photronics related course work: 4
Number of optics/photronics related programs/degrees offered: Certification: New Horizons: Puerto Rico Lasers and Photonics Career Pathways; 1-year Photons Technical Specialist Certificate; Certified by OP-TEC and ETA-I; Associate degree(s): Associate in Engineering Technology in Lasers and Photonics
Type/Description of disciplines/program tracks offered: Physics; Optical Engineering; Optics; Fiber Optics. Our Photonics-Enabled Technologies course includes optical coatings, dimensional metrology, polarization microscopy, and laser processing
Admission deadlines: 8/15/2020 This is for our AAS program. We can accept applications up to the last minute, but space will be limited.
Year program was founded: 2016
Contact: Jonathan Friedman, Director
Email: jsfriedman@uagm.edu
Website: http://prpi.suagm.edu
Mailing address: School of Science, Technology and Environment, Universidad Ana G. Mendez, PO Box 21150, San Juan PR 00928-1150

WASHINGTON

Lake Washington Institute of Technology  
Kirkland, Washington USA

Name of department: Photonics
Number of core optics/photronics students currently enrolled in a related program: 6
Number of students in optics/photronics related course work: 6
Optics/photronics related programs/degrees offered: Certification: Photonics Technology; Certificate of Proficiency; Associate degree(s): Electronics Technology
Type/Description of disciplines/program tracks offered: Physics; Electrical Engineering; Photonics
Year program was founded: 2016
Contact: Stephanie Bostwick, Assistant Professor
Email: stephanie.bostwick@lwtech.edu
Website: http://catalog.lwtech.edu/preview_program.php?catoid=2&poid=919&returnto=43
Mailing address: 11605 132nd AVE NE, Kirkland WA 98125 USA

NORTH CAROLINA

Central Carolina Community College  
Lillington, North Carolina USA

Two year associate degree program in Lasers & Photonics Technology preparing students for photonics technician careers in research, development, manufacturing, or field service. Students also obtain a certificate in electronics engineering technology.
Name of department: Laser and Photonics Technology
Number of core optics/photronics students currently enrolled in a related program: 30
Number of students in optics/photronics related course work: 40
Number of optics/photronics related courses offered in this program: 5
Optics/photronics related programs/degrees offered: Certification: Electronics Engineering Technology; Associate degree(s): AAS in Laser and Photonics Technology (20)
Type/Description of disciplines/program tracks offered: Physics; Optical Engineering; Electrical Engineering; Optics; Photonics; Fiber Optics True; Five High-Energy Laser Labs for Hands-on Application Training
Academic and research specialties related to optics/photronics: Lasers & Fiber Optics
Admission deadlines: 8/17/2020 Registration Ends
Year program was founded: 1986
Contact: Mr. Gary Beasley, Lead Instructor
Email: gbeasley@cccc.edu
Website: http://www.cccc.edu
Mailing address: Central Carolina Community College, Laser & Photonics Tech Dept, 1075 E. Cornelius Harnett Blvd, Lillington NC 27546 USA
ARGENTINA

National University of Tucuman
San Miguel de Tucuman, Argentina

Name of department: Department of Lighting, Light and Vision
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 20
Number of optics/photonics related courses offered in this program: 4
Type/Description of disciplines/program tracks offered: Technical Designer of Lighting (2 years) and Lighting Designer (4 years), Masters Degree on Lighting, Doctorate Degree in Visual Environment and Efficient Lighting
Academic and research specialties related to optics/photonics: Optics and Lighting, Physiological Optics, Lighting and Vision, Photometry and Radiometry, Luminous Sources, Impact of lighting on the environment and on humans
Admission deadlines: University Technical Designer in Lighting: December of every year; Master, and Doctorate on any time. Postgraduate Specialist: February of even years
Contact: Dr. Elisa Margarita Colombo
Email: ecocolombo@herrera.unt.edu.ar
Website: http://www.wl.herrera.unt.edu.ar/faceyt/dllyv/
Mailing address: Av. Independencia 1800, San Miguel de Tucuman Tucuman 4000 Argentina

Universidad de Buenos Aires
Buenos Aires, Argentina

The College of Engineering, UBA (Facultad de Ingenieria, UBA) offers a professional-oriented postgrade course in optics, optoelectronics and photonics, with a title of Specialist in Optoelectronics Engineering (one year) or a research-oriented Master in Optoelectronics and Photonics Engineering (two years) directed to engineers, physicists and researchers who want to work in these fields, to cover the lack of professionals specialized in optoelectronics and photonics.

Name of department: Facultad de Ingenieria, Dept. Fisica y Electronica
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 22
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Biomedical optics; Fiber optics
Accreditation Program: Master Accreditation
Accreditation Organization: CONEAU (Argentina)
Admission deadlines: Application Deadline: April 1 (for 2021 year)
Admission requirements: Electrical or Electronic Engineer Title or equivalent University Title.
Year program was founded: 2001
Contact: Dr. Liliana I. Perez, Associate Professor
Email: optoelectronica.fiuba@gmail.com
Website: http://www.fi.uba.ar/
Mailing address: Dto. de Fisica, Facultad de Ingenieria, Paseo Colon 850, Buenos Aires 1063 Argentina

Universidad Nacional de Rosario
Rosario, Argentina

Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 4
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 7
Type/Description of disciplines/program tracks offered: Bachelor of Philosophy. Master of Philosophy (research only program), Computer Sciences
Academic and research specialties related to optics/photonics: lasers, fiber optics, guided optics, optoelectronics, nonlinear crystals
Year program was founded: 1987
Contact: Prof. Guillermo H. Kaufmann, Head of Optical Metrology Lab.
Email: kaufmann@ifir-conicet.gov.ar
Website: http://www.ifir-conicet.gov.ar/optics/gfk.html
Mailing address: Inst de Fisica Rosario, Optical Metrology Lab., Ocampo y Esmeralda, Rosario Santa Fe S2000EZP Argentina

ARMENIA

National Polytechnic University of Armenia
Yerevan, Armenia


Name of department: Radio Engineering and Communication Systems
Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 7
Type/Description of disciplines/program tracks offered: BSEE in Engineering of Optics Communication Communication. MS in Optics Communication. PhD in Radioengineering and Communication.
Academic and research specialties related to optics/photonics: basics of fiber optics communication, fiber optics communication media & passive components, fiber optics communication systems, optoelectronics, integrated optics, optical communication technology, optical networks
Year program was founded: 1998
Contact: Prof. Hovik Baghdasaryan, Head of Fiber Optics Communication Lab. named after Vardges Barsam
Email: hovik@seua.am
Website: http://polytech.am/wpolytech/
Mailing address: National Polytechnic University of Armenia, Fiber Optics Communication Laboratory, 105 Terian str., Yerevan 9 Armenia

Yerevan State University
Yerevan, Armenia

Name of department: Quantum Electronics
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 10
Number of optics/photonics related courses offered in this program: 7
Type/Description of disciplines/program tracks offered: Bachelor of Science, Bachelor of Philosophy, Master of Philosophy (research only program), Master of Engineering (Photonics) (coursework) - please refer to http://programsandcourses.anu.edu.au/2015/program/NENPH. PhD
Academic and research specialties related to optics/photonics: physics, optical engineering; Optics; Photonics; Fiber optics
Year program was founded: 1995
Contact: Khachatur Nerkararyan, Professor
Email: knerkar@ysu.am
Website: http://www.ysu.am
Mailing address: 1 A.Manugian st., Yerevan 375049 Armenia

AUSTRALIA

Australian National University
Canberra, Australia

Name of department: Research School of Physics & Engineering, College of Physical and Mathematical Sciences and College of Engineering and Computer Sciences
Number of core optics/photonics students currently enrolled in a related program: 40
Number of students in optics/photonics related course work: 12
Number of optics/photonics related courses offered in this program: 8
Type/Description of disciplines/program tracks offered: Bachelors, masters and doctoral programs available
Academic and research specialties related to optics/photonics: physics, optical engineering; Optics; Photonics; Fiber optics
Year program was founded: 1987
Contact: Prof. Guillermo H. Kaufmann, Head of Optical Metrology Lab.
Email: kaufmann@ifir-conicet.gov.ar
Website: http://www.ifir-conicet.gov.ar/optics/gfk.html
Mailing address: Inst de Fisica Rosario, Optical Metrology Lab., Ocampo y Esmeralda, Rosario Santa Fe S2000EZP Argentina
Academic and research specialties related to optics/ photonics: laser cooling and trapping of atoms, optical materials, photonics, optoelectronic devices, quantum computing, optical solitons, theoretical modelling of nonlinear optical phenomena, nonlinear optics, modern information transmission systems, waveguides and integrated optics, all-optical switching devices, nanophotonics and photonic crystals, nonlinear atom optics and the dynamics of the Bose-Einstein condensates, Optics, Quantum Optics, Relativistic Optics

Admission deadlines: PhD/MPhil applications are accepted throughout the year. Please visit http://www.anu.edu.au/study/information-for/postgrad-research-students for details. For Master of Photonics application deadlines, please visit http://www.anu.edu.au/study/information/Contact: A/Prof. Fu Lan, Convenor, Graduate Academic Network Physics Email: lan.fu@anu.edu.au Website: http://physics.anu.edu.au/ and http://cecs.anu.edu.au/

Mailing address: Student Office, Research School of Physical Sciences and Engineering, Research School of Physics and Engineering, Bldg 60, Australian National University, Canberra ACT 0200 Australia

Macquarie University
Sydney, Australia

Innovative photonics and optics lie at the heart of some of today’s most exciting fundamental scientific discoveries while optics underpins technologies for medicine, environmental monitoring, advanced computers, quantum communications, and manufacturing. Trained and qualified optical scientists, technologists and engineers find work in many different industry sectors. The Bachelor of Science (Physics) program combines studies of physics, optics, material science and electronics in a professionally-oriented degree, and includes technologies such as lasers, nanophotonics, biophotonics, optical fibres and communications. In this degree, you will develop industry-relevant skills including technical writing and communication skills, technology management and practical skills using modern instrumentation. In a highlight of the degree program, our students are placed in local high-technology companies in an industry-based project. Graduates of the degree take up a broad range of employment from engineering to science research support, from management to education and training, with opportunities for postgraduate study also. Building on a strong tradition of optics, optical instrumentation and optical fibre technology in Australia, local employers continue to seek highly qualified graduates in the fields of optics, optoelectronics and photonics or more generally, applied physics, for research and development, and for manufacturing positions in industries including telecommunications, optical components, biomedicine, nanotechnology, imaging, sensing, and defence. Research degrees including MRes and PhD are offered for eligible students. Cutting-edge research projects are supervised on campus or collaboratively in co-tutelle arrangements with other institutions.

Name of department: Physics and Astronomy

Number of core optics/photonics students currently enrolled in a related program: 10

Number of students in optics/photonics related course work: 30

Number of optics/photonics related courses offered in this program: 5

Optics/photonics related programs/degrees offered: Bachelors - Science (Physics), Masters of Research - research and coursework masters degree - preparation for PhD study, PhD by research (3-4 years) - for eligible students. Scholarships available for excellent candidates.

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics; Astronomy and Astrophotonics.

Academic and research specialties related to optics/ photonics: Strong research base in optics within the Physics and Astronomy, Australian Astronomical Optics, and Electronic Engineering departments: includes MQ Photonics Centre and concentrations of research excellence in lasers, photonics, micro-photonics, bio-photonics, nano-optics and nano- photonics, and imaging.

Admission deadlines: Academic year commences in February each year. Applications due in July of previous year; late applications possible with payment of a late fee. PhD applications accepted all year round.

Year program was founded: 1988

Contact: Judith Dawes, Prof in Physics, Director MQ Photonics Research Centre Email: judith.dawes@mq.edu.au

Website: http://www.physics.mq.edu.au

Mailing address: Macquarie University, Dept. of Physics and Astronomy, Sydney NSW 2109 Australia

Swinburne University of Technology
Hawthorn, Australia

Name of department: Physics and Astronomy

Contact: Dr. Brenton Hall
Email: bhall@swin.edu.au
Website: http://www.swinburne.edu.au/

Mailing address: Swinburne Univ of Technology, Dept of Physics & Astronomy Rm EN153, John St, Hawthorn VIC 3122 Australia

The University of Melbourne
Melbourne VIC Australia

Name of department: School of Physics: Optical Physics Group

Number of core optics/photonics students currently enrolled in a related program: 35

Number of students in optics/photonics related course work: 20

Optics/photonics related programs/degrees offered: Students undertake a BSc with a major in Physics or Mathematical Physics. Optics- related subjects are offered in the undergraduate program. A MSc by coursework in Physics is offered by the University. A MPhil by research is also offered. True A PhD program is offered. Students submit a thesis for examination after 3 - 4 years of research.

Type/Description of disciplines/program tracks offered: Physics; Optics and Applied Optics: Northern Australian Institute of Physics; Australian Government Tertiary Education Quality and Standards Agency


Year program was founded: 1882

Contact: Professor Ann Roberts, Professor
Email: ann.roberts@unimelb.edu.au
Website: http://optics.physics.unimelb.edu.au/

Mailing address: University of Melbourne, School of Physics, Victoria 3010 Australia

University of Sydney - School of Physics
Sydney, Australia

MSc(research) or PhD in Physics with specialization in optics and photonics. MSc in Photonics and Optical Sciences: 2 semester coursework including Guided waves and Optical communications, Optical Instrumentation and Imaging, Optical Materials and Methods, Optical Sources and Detectors, Physical and Nonlinear Optics, Quantum Optics and Nanophotonics, Biophotonics and Microscopy, Optics in Industry.

Name of department: Institute of Photonics and Optical Sciences (IPOS)

Number of core optics/photonics students currently enrolled in a related program: 20

Number of students in optics/photonics related course work: 50

Number of optics/photonics related courses offered in this program: 8

Optics/photonics related programs/degrees offered: BSc (Honours); PhD in Physics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Nanophotonics, nonlinear optics; optical fibres; photonic engineering; stimulated Brillouin scattering; astrophotonics; polymer fibre; microwave photonics; optical sensors.

Admission deadlines: Please enquire Semester 1 (March) and Semester 2 (July) enrolments are possible.

Contact: Martijn de Sterke, Professor
Email: ipos.admin@sydney.edu.au
Website: http://sydney.edu.au/ipos/

Mailing address: The University of Sydney, IPOS, School of Physics A28, Sydney NSW 2006 Australia
University of Technology Sydney
Sydney, Australia

Optical related courses at UTS include introductory optics and electromagnetics, applied optics, imaging science (including medical and general imaging and signal processing), optoelectronic devices, energy and solar energy, nanophotonics. There are also various supporting courses such as electron and force microscopy, computational physics, maths, data analysis, electronics and interfacing. D'Tech also includes courses on research and project management, project planning, IP and technology commercialisation. There is an emphasis on laboratory work in the core optics subjects.

Name of department: School of Mathematical and Physical Sciences
Number of core optics/photonics students currently enrolled in a related program: 70
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: Bachelor of Science (Applied Physics); Bachelor of Science (Nanotechnology); Bachelor of Biomedical Physics. Master of Science (Applied Physics) by research; Master of Science (Nanotechnology) by research. Doctor of Philosophy (Physics or Nanotechnology)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Photonics; Nanophotonics; Biomedical optics
Academic and research specialties related to optics/photonics: Optical materials, polymer optics, thin films, nanophotonics, plasmonics, quantum structures, lighting and daylighting, solar energy, glazing and energy efficiency, fluorescence, complex optical media theory.
Admission deadline: 30 September
Year program was founded: 1980
Contact: Dr Annette Dowd
Website: https://www.uts.edu.au/about/faculty-science/school-mathematical-and-physical-sciences/about-us
Mailing address: PO Box 123, Broadway, Sydney NSW 2007 Australia

BELGIUM

Ghent University (UGent)
Ghent, Belgium

The aim of these master programs is to form engineers and scientists with firm basic knowledge in the field of photonics and with the skills to apply this knowledge to the design, realisation and the management of photonic systems for a broad range of application domains. Furthermore the students will have the opportunity to broaden their knowledge and skills in other domains, such as ICT, biosciences, physics and chemistry of materials, industrial management. The theoretical courses cover all the basics in Photonics as well as more advanced and specialized subfields of photonics. The practical classes provide the students with a training in all kind of photonic domains where they use the acquired theoretical knowledge to handle this projects with a professional approach.

Name of department: Dept. of Information Technology
Number of core optics/photonics students currently enrolled in a related program: 150
Number of optics/photonics related courses offered in this program: 35
Optics/photonics related programs/degrees offered: Bachelor of Science in Electrical Engineering / Bachelor of Science in Applied Physics. European Master of Science in Photonics. English taught 2-year master program. Jointly offered by the degree-conferring partners: Ghent University & Vrije Universiteit Brussel. PhD in Photonics. There are several research groups active in the field of photonics. The total number of PhD students in the field of photonics is of the order of 120.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Photonic integration and nanophotonics III-V and Si-based photonics; Liquid Crystals; Microsystems
Accreditation Organization: EUR-ACE accreditation by CTI (Commission des Titres d'Ingénieur) & ENEA (European Network for Accreditation of Engineering Education)
Year program was founded: 2004
Contact: Bert Coryn, Photonics Programme Officer
Email: bert.coryn@ugent.be

Website: http://www.masterphotonics.be
Mailing address: Photonics Secretariat, INTEC-Department, Technologiepark-Zwijnaarde 15, Ghent B-9052 Belgium

Vrije Universiteit Brussel
Brussels, Belgium

The multidisciplinary European MSc. in Photonics offers a challenging program with skills development like laser engineering, optical communication, optical materials, micro photonics and optical sensors. Next to the fundamental science of photonics, students receive an in-depth training in engineering of light-based phenomena and systems. A dedicated team of professors with an impressive track record in photonics and optics research train students during the two-year curriculum (120 ECTS) which leads to a joint degree from UGent and VUB. This program prepares students for a professional career in innovative industries and research domains such as biotechnology, health care, agriculture and food, green energy, ICT and Industry 4.0.

Name of department: Department of Applied Physics and Photonics
Number of core optics/photonics students currently enrolled in a related program: 40
Number of optics/photonics related courses offered in this program: 40
Optics/photonics related programs/degrees offered: Certification: European Master of Science in Photonics. Bachelor Engineering Sciences. European Master of Science in Photonics (Joint Master with Universiteit Gent (Belgium), Language=English). PhD Photonics Engineering
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Biomedical optics
Year program was founded: 2004
Contact: Prof. Heidi Ottevaere, Programme Director
Email: Heidi.Ottevaere@vub.be
Website: http://www.b-phto.org
Mailing address: Vrije Univ. Brussel, Applied Physics & Photonics Dept., Pleinlaan 2, Brussels B-1050 Belgium

BRAZIL

Universidade Federal de Pernambuco
Recife, Brazil

Name of department: Departamento de Fisica
Number of students in optics/photonics related course work: 24
Number of optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: BSc in Physics; MSc in Physics; PhD in Physics
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics
Year program was founded: 1978
Contact: Cid B. de Araújo, Professor of Physics
Email: cid@df.ufpe.br
Website: http://www.ufpe.br/df
Mailing address: Universidade Federal de Pernambuco, Departamento de Fisica, Recife Pernambuco 50670-901 Brazil

Universidade Federal do Rio Grande do Sul
Porto Alegre, Brazil

Physics: http://www.if.ufrgs.br/
Material Sciences: http://www.ufrgs.br/pgcimat/
Microelectronics: http://www.if.ufrgs.br/pgmicro/
Name of department: Physics, Laser Spectroscopy and Film Optics
Number of core optics/photonics students currently enrolled in a related program: 12
Number of students in optics/photonics related course work: 120
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: Certification: Initiation to science, Initiation to technology
Associate degree(s): Extension activities. BSc in Physics, BSc in Physical Engineering; MSc in Physics, Materials Science or Microelectronics; Dr in Physics, Materials Science or Microelectronics
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Certification: http://www.if.ufrgs.br/
Academic and research specialties related to optics/photonicst: Optical thin films, integrated optics, optics of interfaces, anti-reflection and superhydrophobic surfaces.

Accreditation Program: Physics
Accreditation Organization: Physics Institute, UFRGS; CAPES - Ministry of Education.

Year program was founded: 1963
Contact: Flavio Horowitz, Prof.
Email: flavio.horowitz@ufrgs.br
Website: http://www.ufrgs.br/english/home
Mailing address: Instituto de Física, UFRGS, Campus do Vale, CP 15051, Porto Alegre RS 91501-970 Brazil

Several programs are offered by the Department of Engineering Physics. The undergraduate program provides solid training in general and applied physics, with a possible specialization in photonics during the fourth year. At the graduate level, Masters and Ph.D. programs in Applied science are offered. Members of the Department can offer research projects in Engineering Physics as well as Biomedical Engineering. The research areas that are actively pursued comprise: optical fibre devices and systems, spectroscopy, endoscopy, optical coherence tomography, confocal endoscopy, optical thin films, biomedical optics, translational research in the operating room, micro-fluidics, micro-opto-electro-mechanical systems (MOEMS), photonic crystal fibres, polymer fibers, fiber Bragg gratings, quantum and nonlinear optics, organic light-emitting devices, laser processing of materials and others.

Name of department: Engineering Physics
Number of core optics/photons students currently enrolled in a related program: 50
Number of students in optics/photons related course work: 150

Optics/Photons related programs/degrees offered: Bachelor of Engineering Physics and Master of Engineering (Industrial Internship) in Engineering Physics.

Type/Description of disciplines/program tracks offered: Physics; Biomedical optics.

Admission deadlines: Admissions to Bachelors programs are accepted twice per year. Admissions to graduate programs are accepted three times per year. For more information, consult http://www.polymtl.ca/admission/en/graduate-studies/check-application-deadlines

Year program was founded: 1958
Contact: Prof. Alain Rochefort, Head of Engineering Physics Dept.
Email: alain.rochefort@polymtl.ca
Website: http://www.polymtl.ca/phys
Mailing address: Ecole Polytechnique de Montréal, Dept. of Engineering Physics, P.O. Box 6079, Station Centre-Ville, Montréal QC H3C 3A7 Canada

Ecole Polytechnique de Montréal, Quebec Canada

Engineering Physics is an interdisciplinary field of study where new and advanced materials, devices and systems are engineered based on our fundamental understanding of physics.

Carleton University
Ottawa, Ontario Canada

Name of department: Carleton School of Information Technology
Number of core optics/photons students currently enrolled in a related program: 80
Number of students in optics/photons related course work: 80

Optics/photons related programs/degrees offered: Bachelor of Engineering Physics. Masters in Applied Science with specialty in Engineering Physics or Biomedical Engineering. Ph.D. in Applied Science with specialty in Engineering Physics or Biomedical Engineering.

Name of department: Electrical and Computer Engineering
Number of core optics/photons students currently enrolled in a related program: 12
Number of students in optics/photons related course work: 90

Optics/photons related programs/degrees offered: Bachelor of Engineering Physics and Master of Engineering (Industrial Internship) in Engineering Physics.

Canadian Engineering Accreditation Board (CEAB). Our department is accredited by the Canadian Engineering Accreditation Board (CEAB). Our program is accredited by the Canadian Engineering Accreditation Board (CEAB).

Ryerson University
Toronto, Ontario Canada

Name of department: Electrical and Computer Engineering
Number of core optics/photons students currently enrolled in a related program: 12
Number of students in optics/photons related course work: 90

Optics/photons related programs/degrees offered: Bachelor of Engineering Physics and Master of Engineering (Industrial Internship) in Engineering Physics.

Canadian Engineering Accreditation Board (CEAB). Our department is accredited by the Canadian Engineering Accreditation Board (CEAB).
UNDERGRADUATE/GRADUATE PROGRAMS

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering
Academic and research specialties related to optics/photonics: We have strong research groups working on following areas: 1. Radio over fiber systems. 2. Infrared Wireless Communications. 3. Optical sensors and fiber Bragg gratings. 4. Biomedical Physics. visit http://www.ee.ryerson.ca/~fernando
Year program was founded: 1997
Contact: Dr. Xavier Fernando, Associate Professor
Email: fernando@ee.ryerson.ca
Website: http://www.ee.ryerson.ca/
Mailing address: Ryerson University, Electrical and Computer Engineering, 350 Victoria St, Toronto ON M5B 2K3 Canada

Université Laval
Quebec, Quebec Canada
The Center for Optics, Photonics, and Lasers (COPL), brings together researchers from the Department of Physics, Engineering Physics and Optics, from the Department of Chemistry and from the Department of Electrical and Computer Engineering of Université Laval in Quebec City. The Center also includes researchers from École Polytechnique de Montréal, McGill University, Université de Sherbrooke, INRS-Energie, Matériaux et Télécommunications, École de technologie supérieure, Concordia University, UQAM. For information: www.copl.ulaval.ca
Name of department: Center for Optics, Photonics, and Lasers (COPL)
Number of core optics/photonics students currently enrolled in a related program: 150
Number of students in optics/photonics related course work: 150
Number of optics/photonics related courses offered in this program: 60
Optics/photonics related programs/degrees offered: Bachelor of Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Chemistry, MSc in Physics, MSc in Electrical Engineering, MSc in Chemistry, MSc in Biophotonics. PhD in Physics, PhD in Electrical Engineering, PhD in Chemistry, PhD in Biophotonics
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics; Chemistry
Academic and research specialties related to optics/photonics: Optical communications; Imaging; Metrology; Optical Instrumentation; Lasers and Ultrafast Pulses; Photonic Materials; Guided-Wave Optics and Fiber Optics; Biophotonics
Admission deadlines: see www.reg.ulaval.ca
Year program was founded: 1967
Contact: Sophie LaRochelle, Director
Email: copl@copl.ulaval.ca
Website: http://www.copl.ulaval.ca
Mailing address: COPL, Pavillon d’optique-photonique, Room 2104, Université Laval, Quebec Quebec G1V 0A6 Canada

University of Toronto
Toronto, Ontario Canada
Name of department: Medical Biophysics
Number of core optics/photonics students currently enrolled in a related program: 12
Number of students in optics/photonics related course work: 15
Number of optics/photonics related courses offered in this program: 1
Optics/photonics related programs/degrees offered: MSc and PhD degrees available.
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Optics; Photonics
Contact: Merle Casci, Administrator/Business Manager
Email: cascic@sri.utoronto.ca
Website: http://medbio.utoronto.ca
Mailing address: Univ. of Toronto, Medical Biophysics, Room 2104, 15-706, 101 College St., Toronto ON M5G 1L7 Canada

University of Waterloo
Waterloo, Canada
Name of department: Physics and Astronomy
Number of core optics/photonics students currently enrolled in a related program: 28
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: Certification: Education Program for Photonics Professionals (EP3) 6 courses, each receive a certificate, receive a diploma for all 6 courses. MS in Physics. PhD in Physics

Type/Description of disciplines/program tracks offered: Physics; Optics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Quantum Optics
Contact: Donna Strickland, Assoc. Professor
Email: strickla@uwaterloo.ca
Website: https://uwaterloo.ca/physics-astronomy/
Mailing address: Dept. of Physics and Astronomy, University of Waterloo, Waterloo ON N2L 3G1 Canada

China

Beihang University
Beijing, China
Name of department: School of Electronic and Information Engineering
Number of core optics/photonics students currently enrolled in a related program: 80
Number of students in optics/photonics related course work: 80
Number of optics/photonics related courses offered in this program: 15
Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics
Contact: Zheng Zheng, Professor
Email: zhengzheng@buaa.edu.cn
Website: http://www.ee.buaa.edu.cn
Mailing address: BeiHang Univ., School of Electronics & Information Engineering, No 37 Xueyuan Rd, Haidian District, Beijing 100081 China

Beijing Institute of Technology
Beijing, China
Name of department: School of Optics and Photonics
Number of core optics/photonics students currently enrolled in a related program: 1695
Number of optics/photonics related courses offered in this program: 30
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Optical System Design; Biomedical optics; Fiber optics
Contact: Liquan Dong, Associate Professor
Email: kylind@bit.edu.cn
Website: http://oep.bit.edu.cn/
Mailing address: 5 South Zhongguancun Street, Haidian District, Beijing Institute of Technology, School of Optics and Photonics, Beijing 100081 China

Fudan University
School of Information Science and Engineering
Shanghai, China
Name of department: Department of Optical Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 210
Number of optics/photonics related courses offered in this program: 30
Optics/photonics related programs/degrees offered: Associate, bachelors, master and doctoral programs/diages available.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering
Year program was founded: 2000
Contact: Prof. Rongjun Zhang, Prof. Dr.
Email: rjzhang@fudan.edu.cn
Website: http://www.optics.fudan.edu.cn
Mailing address: Fudan University, Department of Optical Science and Engineering, School of Information Science & Engineering, Shanghai 200433 China

Nanjing University of Science and Technology
Nanjing, China
Name of department: Optics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics
Academic and research specialties related to optics/photonics: Quantum Optics
Contact: Prof. Dr. Rongjun Zhang
Email: rjzhang@fudan.edu.cn
Website: http://www.optics.fudan.edu.cn
Mailing address: Fudan University, Department of Optical Science and Engineering, School of Information Science & Engineering, Shanghai 200433 China

Nanjing University of Science and Technology
UNDERGRADUATE/GRADUATE PROGRAMS

Number of core optics/photonics students currently enrolled in a related program: 80
Number of optics/photonics related courses offered in this program: 22
Optics/photonics related programs/degrees offered: Bachelor's, Masters, Doctoral degrees available.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering

Academic and research specialties related to optics/photonics: pattern recognition, image processing of synthetic-aperture radar, coherent optics, holography, electronic optics, optical surface analysis, laser physics, optical design, thin film, fiber optics, optical technology, hybrid photoelectric systems, solid image device, interferometry, optical metrology.

Contact: Prof. Tao Chunkan, Professor
Email: taock812@sohu.com
Website: http://www.njust.edu.cn
Mailing address: Room 28-301, Nanjing 210094 China

Tsinghua University
Beijing, China
http://www.tsinghua.edu.cn/publish/dpient/index.html
Name of department: Department of Precision Instrument
Number of core optics/photonics students currently enrolled in a related program: 100
Number of students in optics/photonics related course work: 150
Optics/photonics related courses offered in this program: 36
Optics/photonics related programs/degrees offered: BSc in Optics; MSc in Optics; PhD in Optics

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics; Biomedical optics


Year program was founded: 1959
Contact: Haoyun WEI, Associate Professor
Email: luckiwei@mail.tsinghua.edu.cn
Website: https://www.tsinghua.edu.cn/en/
Mailing address: Tsinghua Univ., Dept. of Precision Instrument, Institute of Opto-electronic Engineering, Beijing Beijing 100084 China

Zhejiang University
Hangzhou, China
http://www.zju.edu.cn
Name of department: College of Optical Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 1000
Number of students in optics/photonics related course work: 1000
Optics/photonics related courses offered in this program: 60

Optics/photonics related programs/degrees offered: Bachelor's: Optoelectronic information science and Engineering, Masters: Optical Engineering, Doctoral: Optical Engineering

Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Contact: Yaoyong Shi, Professor
Email: yaoyongshi@zju.edu.cn
Website: http://opt.zju.edu.cn/english/
Mailing address: Building#5, Zijingang Campus, Zhejiang University, Hangzhou, Zhejiang, 310058 China

Academic and research specialties related to optics/photonics: Optical properties in semiconductors, solitons, Astronomical spectroscopy, quantum optics, Optical information processing
Year program was founded: 1968
Contact: Daniel Jaramillo, Director
Email: direccionfisica@udea.edu.co
Website: www.udea.edu.co
Mailing address: calle 70 No.52-21 of. 6-105, Medellin Antioquia Colombia

Universidad del Valle
Santiago de Cali, Colombia
http://www.univalle.edu.co/
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 35
Optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: B. Sc. in Physics, M. Sc. in Physics Research work in one Optics / Photonics specialty.

Type/Description of disciplines/program tracks offered: Physics; Optics; Nanophotonics; Biomedical optics

Academic and research specialties related to optics/photonics: Laser Physics, Biophotonics, Theoretical Photonics and Biophotonics Modelling and simulations, Quantum Optics, and Material Processing and Optics of Materials
Year program was founded: 1966
Website: http://www.univalle.edu.co
Contact: Dr. Efrain Solarte Rodriguez, Professor
Email: efrain.solarte@correounivalle.edu.co
Website: http://www.univalle.edu.co/facultadesydependencias/ciencias.html
Mailing address: Universidad del Valle, Dpto de Fisica, Calle 13 No 100-00 Ed 320, Santiago de Cali Valle del Cauca 7600 Colombia

Universidad Industrial de Santander
Bucaramanga, Colombia
http://www.unisantander.edu.co
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 18
Number of students in optics/photonics related course work: 21
Optics/photonics related courses offered in this program: bachelor's: physic and experimental high formation.
Optics/photonics related programs/degrees offered: Bachelor's: physic, Master's: Physical master optic mention. Doctoral program in physic: Optic Mention

Academic and research specialties related to optics/photonics: Image treatment, optical metrology, white light interferometry
Year program was founded: 1983
Contact: Dr. Jaime E. Meneses F., Director
Email: jaime@uis.edu.co
Website: http://www.uis.edu.co/investigacion/index.htm
Mailing address: Universidad de Santander, Bucaramanga, Colombia

Universidad Nacional de Colombia - Sede Medellin
Medellin, Colombia
http://www.uned.edu.co
Name of department: Mathematics (School of Physics)
Number of core optics/photonics students currently enrolled in a related program: 16
Number of students in optics/photonics related course work: 25
Optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: bachelor's: Engineering Physics (Lines: Optics I: Coherence, Technical optics; Optics II: Photonics & Optoelectronics; Optics III: Spectroscopy and
Laser Technology). Master of Sciences - Physics. Philosophical Doctor of Sciences - Physics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Photonics Fundamentals of Photonics


Year program was founded: 2000

Contact: Dr. Noora Heikkilä, Coordinator

Email: noora.heikkila@uef.fi

Website: http://www.fotonik.dtu.dk

Mailing address: Technical Univ. of Denmark, DTU Fotonik, Bldg. 343, Kgs Lyngby DK-2800 Denmark

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University of Eastern Finland

Joensuu, Finland

The Master’s Degree Programme in Photonics is a two-year programme taught in English at the Institute of Photonics, University of Eastern Finland. Master’s degree in Photonics offers outstanding skills needed in international careers in optics, photonics, and related fields. The programme covers all important aspects from theory to practical work in laboratories with world-class facilities. The education is based on high-quality photonics research in the department. This programme is intended for the applicants with a Bachelor’s degree or equivalent in physics, optics, photonics, physical and engineering sciences with an extensive physics basic education, or another discipline related to the programme, entailing proficiency in physics and mathematics.

Name of department: Institute of Photonics

Optics/photonics related programs/degrees offered: Masters: The Master’s Degree Programme in Photonics is a two-year programme taught in English at the Institute of Photonics, University of Eastern Finland. Master’s degree in Photonics offers outstanding skills needed in international careers in optics, photonics, and related fields. The programme covers all important aspects from theory to practical work in laboratories with world-class facilities. The education is based on high-quality photonics research in the department. This programme is intended for the applicants with a Bachelor’s degree or equivalent in physics, optics, photonics, physical and engineering sciences with an extensive physics basic education, or another discipline related to the programme, entailing proficiency in physics and mathematics.

Programme homepage: www.uef.fi/mdp-photonics. Doctoral: The Doctoral Programme in Science, Technology and Computing combines science with computational analysis and technology to form a multidisciplinary programme. The computational component includes computing sciences, mathematics and inverse problems and mathematical modelling. Science and technology combine photonics, chemistry and medical physics and technology. The purpose of the doctoral programme is to provide students with the competences required to create new knowledge, apply scientific research methods in a critical manner and independently, and to work in demanding expert and research positions in academia, business and the public sector. On the programme, students can complete a doctoral degree in the following fields of science and research: photonics, computer science, mathematics, computational physics and inverse problems, chemistry, medical physics and technology. Research conducted in internationally acknowledged research groups forms a key part of the studies. Students will benefit from wide-ranging networking opportunities during their studies. Programme homepage: www.uef.fi/dpscitco

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics


Year program was founded: 2000

Contact: Karsten Rottwitt, Professor

Email: karo@fotonik.dtu.dk

Website: http://www.fotonik.dtu.dk

Mailing address: Technical Univ. of Denmark, DTU Fotonik, Bldg. 343, Kgs Lyngby DK-2800 Denmark

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Technical University of Denmark - SPIE, Student Chapters, OSA, Student Chapter

DTU Fotonik

Kgs Lyngby, Denmark

General optics courses are offered, including courses in applied photonics, linear and nonlinear optics, waveguide optics and nano-photonics. Specializations in photonic materials and structures, lasers and light-sources, bio-photonics and sensors, and components for optical communication are offered. Entrepreneurship is part of the students curriculum. Students may focus on theoretical competences or explore an education with strong focus on experimental activities.

Name of department: DTU Department of Photonics Engineering

Number of core optics/photonics students currently enrolled in a related program: 15

Number of students in optics/photonics related course work: 42

Number of optics/photonics related courses offered in this program: 1

Optics/photonics related programs/degrees offered: Bachelors: BS in Physics and Nanotechnology, BS in IT and Communication Technology. Masters: MS in Photonics Engineering, MS in Telecommunication. Doctoral: PhD

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Photonics; Biomedical optics; Fiber optics

Online application form at www.dtu.dk

Year program was founded: 2000

Contact: Karsten Rottwitt, Professor

Email: karo@fotonik.dtu.dk

Website: http://www.fotonik.dtu.dk

Mailing address: Technical Univ. of Denmark, DTU Fotonik, Bldg. 343, Kgs Lyngby DK-2800 Denmark

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Franche-Comté University

Besançon, France

Purpose: Training of engineers familiar with physical phenomena underlying new technologies, from an applied as well as a fundamental point of view (industry and research), in such fields as photonics, micro/nano-optics, quantum optics, micro/nano-technologies, instrumentation, time-frequency metrology, micro-oscillators, micro/nano-acoustics, biophotonics, and complex systems involving these disciplines of careers: Telecommunications, healthcare, aerospace. Fundamental and applied research in academia or high-tech industrial development/R&D.

Name of department: Faculty of Sciences and Technologies

Number of core optics/photonics students currently enrolled in a related program: 690

Number of optics/photonics related courses offered in this program: 15


Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Optics; Photonics; Fiber optics
Academic and research specialties related to optics/photonics: nano-optics, quantum optics, non linear optics, ultrafast optics.
Contact: Fabrice Devaux, Full professor
Email: fabrice.devaux@univ-fcomte.fr
Website: http://sciences.univ-fcomte.fr
Mailing address: Optical Department, FEMTO-ST Institute UMR 6174 CNRS, 15B Avenue des Montboucoux, Besançon 25030 France

Institut d’Optique Graduate School SPIE. STUDENT CHAPTERS OSA Student Chapter
Palaiseau, France

Celebrating 100 years of History in 2017, Institut d’Optique Graduate School is a leading education and research institution in photonics, in France. It was founded in 1917 and its first Director General was Charles FABRY, known for the Fabry-Pérot interferometer. The main programme of study at Institut d’Optique leads to the award of the nationally accredited Diplôme d’Ingénieur de l’Institut d’Optique, equivalent to an integrated Master of Science in Engineering, in Photonics. This programme is highly selective and prestigious, with very high career prospects, whether it be in companies, academia or as innovators. It is a 3-year programme, equivalent to a final year of BSc, a Master 1st year and a Master 2nd year. For local applicants, admission is generally by competitive entrance examination taken after two years of intensive undergraduate preparation in the Classes Préparatoires aux Grandes Ecoles. For international students, the programme has been adapted: specific admission processes and creation of an international track in 2017. The international track is a first semester fully taught in English, along with classes by French for foreigners, and updates on photonics and optics. The other semesters are then in French. International students can join as degree-seeking students (long stay, issuance of the degree) or as non-degree/credits only students (short stay, credits transfer only).
Please refer to: https://www.institutoptique.fr/International/MScEng-Diplome-d-ingenieur. Institut d’Optique also offers admission into its other MSc programmes, its Advanced Master in Embedded Lighting Systems (http://embedded-lighting.com/) and PhD programmes.

Name of department: Photonics and Optical Sciences & Engineering
Number of core optics/photonics students currently enrolled in a related program: 700
Number of students in optics/photonics related course work: 550
Number of optics/photonics related courses offered in this program: 65
Optics/photonics related programs/degrees offered:
Master of Science in Engineering (Diplôme d’ingénieur de l’Institut d’optique théorique et appliquée); Master in Optical Science (LOM - Laser, Optique, Matière); Master in Nanosciences (in conjunction with several partners) Institut d’Optique is also a partner of several Universités Paris-Saclay master programmes. PhD in Physics (Optical Science)

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: intensive optics, signal and image processing labwork
Accreditation Program: MScEng (Diplôme d’ingénieur)
Accreditation Organization: CTI (Commission des Titres d’Ingénieurs)
Admission deadlines: MScEng-Diplôme d’ingénieur: International applicants can send their application until 1st May (degree seeking students) or 15th May (non-degree / exchange students). *Master’s degree and PhD: International students as early as possible during the academic year prior to intended entry, preferably before the end of April.
Year program was founded: 1917
Contact: Pierre Baladi, Head of International Relations
Email: international@institutoptique.fr
Website: http://www.institutoptique.fr
Mailing address: Institut d’Optique Graduate School, 2 Avenue Augustin Fresnel, Palaiseau 91127 France

Light Sciences and Technologies SPIE. STUDENT CHAPTERS OSA Student Chapter
Graduate School
Talence, France

The light Sciences and Technologies Graduate School of the University of Bordeaux provide a multidisciplinary, innovative and international training program from Master to Doctorate. The interdisciplinary graduate program in Light Sciences and Technologies focuses on three domains of excellence of the University of Bordeaux: extreme regimes of light; light generation, manipulation and detection; imaging and biophotonics.
Name of department: University of Bordeaux
Number of core optics/photonics students currently enrolled in a related program: 19
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 33
Optics/photonics related programs/degrees offered:
Light Sciences and Technologies Master Graduate Program. Selected as a French Initiative of Excellence, the Master focuses on knowledge and innovation in light sciences and technologies, providing a multidisciplinary environment for first-class research and education. The UB grad’s in Light Sciences and Technologies is an integrated, interdisciplinary program, provided by both academic and industrial experts. The Master is embedded in a cross-fertilizing research environment, adapted to future professions within photonic industries. Diploma in Physics and engineering, in Sciences Chemistry or Health and life sciences. The Light & PhD students are part of a first-class research environment and technical know-how. They find the benefit of a quality approach in the supervision and mentoring support, and are also trained in a well-balanced and perfectly structured manner. Besides the three years specific research project, further training and modules provide a deep insight into skills which are primary components of an excellent foundation for their future in academia or industry.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics
Academic and research specialties related to optics/photonics: Light matter interaction, laser, nano optics, neurophotonics
Year program was founded: 2018
Contact: Marie Vieules, Program manager
Email: contact.light-st-u-bordeaux.fr
Website: https://light-st.u-bordeaux.fr
Mailing address: 1 rue François Mitterrand, Talence 33405 France

Polytech’Paris-Sud
Orsay, France

The Polytech’Paris-Sud covers 5 years of higher education. Training includes an equal amount of optics and electronics leading up to final year specialized courses in optoelectronics. An important point is the close cooperation between University and Industry in the training of students.

Name of department: Photonics and Optronics devices
Number of core optics/photonics students currently enrolled in a related program: 140
Number of optics/photonics related courses offered in this program: 10
Academic and research specialties related to optics/photonics: Lasers, fibre optics, guided optics, non linear optics, detectors technology, optical telecommunication, image processing, spectroscopy, electro-optics, optoelectronics.

Year program was founded: 1990
Contact: Yves Bernard, Director - Optronics department
Email: yves.bernard@u-psud.fr
Website: http://www.polytech.u-psud.fr
Mailing address: Polytech’Paris-Sud Optronique, Bat 470, Campus d’Orsay, Université Paris Sud 11, Orsay 91405 France

University Jean Monnet
Saint-Etienne, France

Name of department: Faculty of Sciences and Techniques
Number of core optics/photonics students currently enrolled in a related program: 90
Number of students in optics/photonics related course work: 230
Number of optics/photonics related courses offered in this program: 106
Academic and research specialties related to optics/photonics: Lasers, fibre optics, guided optics, bio-optics, detectors technology, optical telecommunication, image processing, spectroscopy, electro-optics, optoelectronics.

Year program was founded: 2009
Contact: Marie-Virginie Leborgne, Director
Email: marie.virginie.leborgne@univ-saint-etienne.fr
Website: http://www.univ-saint-etienne.fr/
Mailing address: Université Jean Monnet, Saint-Etienne, France
Academic and research specialties related to optics/photronics: photonic micro&nano systems, diffractive optics, optical fibres, photosensitivity, sensors, lasers, optical materials, nanophotonics, plasmonics, laser processing, image acquisition and processing, computer vision, non-conventional imaging, colour science, visual rendering, material appearance.

Admission deadlines: depends on the track
Contact: Nathalie Destouches, Professor
Email: nathalie.destouches@univ-st-etienne.fr
Website: https://master-ovm.univ-st-etienne.fr/en/
Mailing address: Hubert Curien Laboratory, UMR CNRS, 18 rue du Pr Benoît Lauras, Saint-Etienne F-42000 France

Germany

Aalen University
Aalen, Germany

Name of department: Optical Engineering / Photonics
Number of core optics/photronics students currently enrolled in a related program: 150
Number of students in optics/photronics related course work: 250
Number of optics/photronics related courses offered in this program: 2
Optics/photronics related programs/degrees offered: Bachelors: Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Year program was founded: 1991
Contact: Prof. Dr. Jürgen Krapp, Professor
Email: juergen.krapp@hs-aalen.de
Website: https://www.hs-aalen.de/de/ph
Mailing address: Aalen University, Beethovenstraße 1, Aalen D-73430, Germany

Abbe School of Photonics
Jena, Germany

Name of department: Friedrich Schiller University Jena
Number of core optics/photronics students currently enrolled in a related program: 150
Number of students in optics/photronics related course work: 300
Number of optics/photronics related courses offered in this program: 40
Optics/photronics related programs/degrees offered: Masters: Master of Science in Photonics is a Master’s degree course providing a multidisciplinary coverage of the field of optics and photonics, from upstream scientific aspects to engineering and applications in major sectors of economy. Students enrolled in the two-year program are trained for technical or scientific positions in industry and academia. Scholarships are available. Doctoral: The Abbe School of Photonics offers an excellent, research-oriented doctoral program for national and international students. A broad academic education at the highest international level in a modern research environment provides a profound up-to-date knowledge in a variety of fields - from fundamental sciences and laser physics to material sciences and life sciences. Well-equipped laboratories offer optimum conditions for research at the frontiers of Optics & Photonics. Regular seminars and workshops held at the ASP provide deep insight into the latest developments in all fields of Optics and Photonics. A cornerstone of our philosophy is to regard and value our doctoral candidates as scientists in all respects. The ASP offers an individually adjusted program to meet each candidate’s scientific background and interests. This guarantees an optimum preparation for a high-profile career in research or industry.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photronics: Biophotonics; Nanophotonics; Ultra Optics; Strong Field Physics
Admission deadlines: https://www.asp.uni-jena.de/msc_application
Year program was founded: 2007
Contact: Dr. Dorit Schmidt, Coordinator
Email: dorit.schmidt@uni-jena.de; phd-asp@uni-jena.de; master-asp@uni-jena.de
Website: http://www.asp.uni-jena.de/
Mailing address: Abbe Ctr of Photonics, Albert-Einstein-Str 6 Jena 07745, Germany

Beuth Hochschule für Technik, University of Applied Science Berlin
Berlin, Germany

Name of department: Mathematics/Physics/Chemistry
Number of core optics/photronics students currently enrolled in a related program: 150
Number of students in optics/photronics related course work: 150
Number of optics/photronics related courses offered in this program: 10
Optics/photronics related programs/degrees offered: Bachelor of Engineering in Applied Physics and Medical Engineering, B. Eng. (6 semesters); Master of Engineering Applied Physics and Medical Engineering (4 semesters), (including laser applications and medical optics), M. Eng.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics Laser technology; Biomedical optics
Academic and research specialties related to optics/photronics: medical optics, lasers, optoelectronics, electron microscopy
Admission deadlines: The Bachelor and Master courses in Applied Physics start in October; Bachelor studies also starts in April
Year program was founded: 1990
Contact: Dr. Ingeborg Beckers, Professor
Email: beckers@beuth-hochschule.de
Website: http://www.beuth-hochschule.de/
Mailing address: Beuth Hochschule Berlin, Univ. of Applied Sciences, Seestr. 64, Berlin 13347 Germany

Erlangen Graduate School in Advanced Optical Technologies (SAOT)
Erlangen, Germany

Today, optics is widely regarded as one of the most important key technologies for this century. Many experts even anticipate that the 21st century will be the century of the photon. Optics and optical technologies have impact to nearly all areas of life and cover a wide range of applications in science and industry. The SAOT provides an interdisciplinary research and education program of excellence within a broad international network of distinguished experts to promote innovation and leadership in the areas optical metrology, optical material processing, optics in medicine, optics in communication and information technology, optical materials and systems as well as computational optics.
Name of department: Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)
Number of core optics/photronics students currently enrolled in a related program: 142
Number of students in optics/photronics related course work: 214
Optics/photronics related programs/degrees offered: Masters: The Master Programme in Advanced Optical Technologies (MAOT) provides in-depth training in the fundamentals and applications of state-of-the-art optical technologies. The programme is highly interdisciplinary and brings together experts and knowledge from the fields of Engineering, Physics, Computer Science and Medicine. At MAOT students get this expertise from across the university in one integrated programme - practically unique in the field of optical technologies. See web site for more details. Doctoral: A doctoral programme starts typically with a course on Fundamentals of Optical Technologies. Each doctoral student chooses then three of the six application areas metrology, material processing, medicine, communication and information technologies, materials and systems or computational optics to acquire broad knowledge in the area of optical technology. A research thesis project in one of these fields under the supervision of a SAOT mentor completes the requirements for the doctoral degree. During the programme doctoral candidates have the opportunity to attend academies which foster intensive team work in the solution of optical problems. A credit point scheme encourages not only the participation in these academies but also the attendance at scientific conferences, workshops and lectures, the publication of scientific papers and the acquisition of soft skills. Research at the SAOT can be undertaken in cooperation with three leading research centres in Erlangen.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Year program was founded: 2006
Contact: Dr.-Ing. Andreas Bräuer
Email: andreas.braeuer@aot.uni-erlangen.de
Humboldt University of Berlin

Berlin, Germany

The MSc in Optical Sciences program is exclusively taught in English and prepares the students for a challenging career in the optics & photonics industry or for the pursuit of a doctoral degree. This is facilitated through several temporally overlapping stages with increasing degrees of specialization. Stage 1 features a broad in-depth education in state-of-the-art optics knowledge with a focus on coherent light-matter interaction. This is followed by stage 2 where the student acquires specialized skills in an elective subject - these elective subjects represent the main research areas of the different research groups at Humboldt University of Berlin and the cooperating non-university research institutes in the Science- and Technology-Park Berlin-Adlershof. Finally, within stage 3 the students start into their own independent research which leads up to the final 6-month master thesis.

Name of department: Institute of Physics

Name of core optics/photonics students currently enrolled in a related program: 150

Name of optics/photonics related courses offered in this program: MSc in Optical Sciences

Type/Description of disciplines/program tracks offered: Physics, Optics, Photonics

Academic and research specialties related to optics/photonics: Berlin-Adlershof is one of the few centers of Optical Sciences in Germany. It features a highly diversified and internationally very visible research portfolio. The optics research groups at the Institute of Physics of the Humboldt University of Berlin.

Heilbronn University

Heilbronn, Germany

Name of department: Mechatronics

Name of core optics/photonics students currently enrolled in a related program: 10

Hochschule Darmstadt,

University of Applied Sciences

Darmstadt, Germany

Name of department: Mathematics and Sciences Faculty

Name of core optics/photonics students currently enrolled in a related program: 250

Name of optics/photonics related courses offered in this program: Bachelor of Science Degreee in Photonic and Machine Vision (7 SemestOptical Technologyer). Master of Science Degreee in Photonic and Machine Vision (3 Semester). Doctoral: A significant amount of students will be given the possibility to work on a PhD. in cooperation with industry / university partners.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics. http://www. fbm.h-da.de/index.php

Academic and research specialties related to optics/photonics: technical optics, optical system design, ophthalmic optics, optometry, optical quality control, laser techniques, interferometry, fiber optics, microoptics, quantitative image analysis, pattern recognition, 3D-image analysis, morphological image processing, machine vision, parallel image processing algorithms, opencv, image processing on android, image processing on iOS

Admission deadlines: The application deadline for winter semester is August, 15 every year. Late applications may be possible till October.

Year program was founded: 1997

Contact: Thomas Netzsch, Prof. Dr.

Email: Thomas.Netzsch@h-da.de

Website: http://www.h-da.de/index.php

Mailing address: Darmstadt University of Applied Sciences, Mathematics and Science Faculty, Schoefferstrasse 3, Darmstadt D-64295 Germany
Berlin are engaged in research regarding the fundamentals of optics & photonics and applied quantum physics (Prof. Arno Rauschenbeutel), light-matter interaction on the nano-scale (Prof. Benson), quantum optics and metrology (Prof. Peters), theoretical atomic, molecular, and optical physics (Prof. Saenz), and the theory of light and matter interaction and light-matter interaction in complex optical and quantum photonic systems (Prof. Busch). Laser systems for ultra-short and -intense pulses, the characterization and shaping of such pulses, the development of corresponding measurement instrumentation for ultrafast processes and their theoretical description is the focus of research at the Max Born Institute (MBI); Profs. Elsässer and Ivanov of MBI are affiliated with the HU Berlin and Prof. Busch of HU Berlin is affiliated with MBI. The Helmholtz Center Berlin (HZB) has at its disposal a powerful source of extreme-UV and X-ray light (BESSY II) that facilitates high-resolution microscopy, novel coherent imaging methods, and in conjunction with the so-called femtosecond laser slicing, allows for ultrafast experiments (Prof. Schneider of HZB is affiliated with HU Berlin). In addition, the HZB conducts extensive research in photovoltaics. The Ferdinand Braun Institute (FBH) develops key technologies in the areas of microwave techniques and optoelectronics with a special emphasis on novel light sources (Prof. Peters of HU Berlin is affiliated with FBH). The German Aerospace Center’s Institute for Optical Sensor Systems (DLR OS) develops novel satellite- and rover-based optical sensors and cameras for applications in earth observation and planetary research (Prof. Habers of DLR OS is affiliated with HU Berlin). The application area “nano- and optoelectronics” the Weierstrass Institute (WIAS) works on problems of applied mathematics with direct reference to Optical Sciences (PD Dr. Bandelow of WIAS is affiliated with HU Berlin). Furthermore, the HU Berlin is the coordinating institution of the Collaborative Research Center 951 “Hybrid Inorganic/Organic Systems for Opto-Electronics” (CRC 951 HIOS). It aims at elucidating the basic chemical, electronic, and photophysical interactions of organic and inorganic nanoscale materials for advanced applications. In addition, the Science- and Technology-Park Berlin-Adlershof features “Photonics/ Optics” as one of its five Technology Centers, which presently hosts some 55 small and medium-sized enterprises. The above-described unique combination of basic and applied optics-related research in Berlin-Adlershof represents the central motivation and provides the basis for the research-oriented Master program in Optical Sciences at HU Berlin.

Admission deadlines: 15 July 2020 is the deadline for starting in October 2020; Deadline for starting in April 2021 will be January 15, 2021.

Year program was founded: 2015
Contact: Kurt Busch, Prof.
Email: optical.sciences@physik.hu-berlin.de
Website: http://www.physik.hu-berlin.de/de/op
Mailing address: Humboldt University of Berlin, Department of Physics, Newtonstr. 15, Berlin 12489 Germany

Karlsruhe School of Optics & Photonics
Karlsruhe, Germany

The KSOP educational concept is designed to qualify its graduates for accelerated careers at the world’s best academic institutions and in optic & photonics high-technology industries. The 2-year Master’s Program spans the bridge between undergraduate classes in natural and engineering sciences and the required in-depth knowledge that is essential for cutting-edge research. It qualifies for a further career in the industry as well as in research. For those who would like to continue their careers in research, KSOP established an exclusive Ph.D. Program. KSOP also is a member of the European Erasmus Mundus Master’s Program EUROPTONICS Advanced Programs for Students, Doctoral Researchers & Industry. By fostering a strong industry partner program, KSOP identified the requirements of O&P companies on its graduates. Those demands and specifications were integrated, e.g., within the M.Sc. program including laboratory courses, research projects, industry internships, and German courses tailored to the qualification of international students. A strong pillar of the Ph.D. qualification concept is the individual coaching and supervision of its doctoral researchers by the research area mentors. On top of this, KSOP actively promotes the thesis work of its doctoral researchers by scientific and technical training. Concomitantly, the professional skills of the graduates are enhanced by tailored personal and management training, e.g., in the MBA Fundamentals Program.

Name of department: International Department of the Universität Karlsruhe
Number of core optics/photronics students currently enrolled in a related program: 300
Number of optics/photons related courses offered in this program: 3
Optics/photons related programs/degrees offered: Certification: The MBA Fundamentals Program for doctoral researchers puts participants in the position to gain management expertise while still working towards their Ph.D. Doctoral researchers often benefit from knowledge on management topics at an early stage of their career. Masters: The 2-year Master Program is taught in English. Applicants need a Bachelor degree in natural or engineering sciences to become part of the interdisciplinary Master program. After a foundation of a solid background, each student chooses a research specialization. The program is completely taught in English. The educational concept of KSOP is supported by a scholarship program of the German Federal Government, the state of Baden-Württemberg and leading Optics & Photonics companies. Industry partners such as ZEISS, Polytrec and Bosch provide students with internships, Master thesis projects, excursions as well as individualized workshops and career events. Both for students and industry the cooperation is highly valued from both sides and most institutes feature research projects in more than one of the research areas. Start of the M.Sc. Program is in October each year. Further information on the application process under www.ksop.kit.edu. Since 2010, KSOP also participates in the Europhotonics Master Program of Erasmus Mundus. Further information on www.europhotonics.org. Doctoral: The Karlsruhe School of Optics & Photonics offers a 3-year Phd program in one of the research areas: Photonic Materials & Devices, Quantum Optics & Spectroscopy, Biomedical Photonics, Optical Systems & Solar Energy.

Certification: The MBA Fundamentals Program for doctoral researchers puts participants in the position to gain management expertise while still working towards their Ph.D. Doctoral researchers often benefit from knowledge on management topics at an early stage of their career. Masters: The 2-year Master Program is taught in English. Applicants need a Bachelor degree in natural or engineering sciences to become part of the interdisciplinary Master program. After a foundation of a solid background, each student chooses a research specialization. The program is completely taught in English. The educational concept of KSOP is supported by a scholarship program of the German Federal Government, the state of Baden-Württemberg and leading Optics & Photonics companies. Industry partners such as ZEISS, Polytrec and Bosch provide students with internships, Master thesis projects, excursions as well as individualized workshops and career events. Both for students and industry the cooperation is highly valued from both sides and most institutes feature research projects in more than one of the research areas. Start of the M.Sc. Program is in October each year. Further information on the application process under www.ksop.kit.edu. Since 2010, KSOP also participates in the Europhotonics Master Program of Erasmus Mundus. Further information on www.europhotonics.org.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics; Quantum Physics & Spectroscopy; Solar Energy

Accreditation Organization: Swiss Agency of Accreditation and Quality Assurance

Admission deadlines: 4/30/2020 M.Sc. Program: Application Deadline for annual program start is April 30 each year — see also www.ksop.kit.edu.

Ph.D. Program: The application is possible any time.

Year program was founded: 2006
Contact: Miriam Sonnenbichler, Program Manager
Email: info@KSOP@idschools.kit.edu
Website: www.ksop.kit.edu
Mailing address: Karlsruhe School of Optics & Photonics, International Department of the Karlsruhe Institute for Technology gGmbH, Schlossplatz 19, Karlsruhe 76131 Germany

Leibniz University Hannover
Hannover, Germany

Name of department: Faculty of Mechanical Engineering / Faculty of Mathematics and Physics
Muenster University of Applied Sciences
Steinfurt, Germany

Basis of the program is a profound education in mathematics, physics and mechanical/electrical engineering. Specialisation is in laser technology and photonics.

Name of department: Applied Physics

Number of core optics/photonics students currently enrolled in a related program: 15

Number of students in optics/photonics related course work: 50

Number of optics/photonics related courses offered in this program: 21

Type of discipline/program tracks offered: Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Optics and photonics, Laser measurement, Laser applications in the life sciences, Quantum optics, Medical optics, Biophotonics, Production measurement technology and monitoring, Image processing, Integrated photonics, Polymer optics, Optical modelling and simulation, Light and illumination technologies

Admission deadlines: Annual admission of new students is for the fall semester which starts at the end of September. Applications should reach the university by June.

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics

Technical University Berlin - Institute of Optics
Berlin, Germany

Name of department: Physics

Number of core optics/photonics students currently enrolled in a related program: 15

Number of students in optics/photonics related course work: 10

Number of optics/photonics related courses offered in this program: 3

Type of discipline/program tracks offered: Bachelor in Physics with specialization in Laser Technology (6 semesters). M. Sc. in Photonics (4 semesters). Teaching language is German. Doctoral: At Muenster University of Applied Sciences several graduate students are pursuing research for their PhD thesis. The PhD degree will be conferred by another university in the framework of a Cooperative PhD program.

Optics and Photonics Education Directory 2020/2021

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Universität Stuttgart - Institut für Technische Optik
Stuttgart, Germany

A strong optics education is offered to both graduate and undergraduate students. The five faculty members teach different optics courses in the Mechanical Engineering Department of the University of Stuttgart. In addition, students from the Physics as well as from the Electronics Department attend some of the lecture courses. Both the undergraduate and graduate programs benefit from the research activities in applied optics. The project work of graduate students as well as the postgraduate work is based on research projects mainly in the field of applied optics. Research opportunities for the Masters and PhD degrees exist in the areas of nondestructive testing, interferometry, holography, speckle techniques, microroughness measurement, optoelectronic devices, analogue and digital image processing, application of diffractive optics (CGH, HOE), surface and subsurface defect analysis, application of photorefractive materials and micro-optics.

Name of department: Institut für Technische Optik

Number of core optics/photonics students currently enrolled in a related program: 70
Number of students in optics/photonics related course work: 200
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: B.Sc. in Mechanical Engineering (spacialization in Optics), B.Sc. in Medical Engineering (spacialization in optics for medizin), M.Sc. in Micro-, Precision and Photonics Engineering MS, M.Sc. in Mechanical Engineering (spacialization in optics), M.Sc. in Medical Engineering (spacialization in optics for medizin), M.Sc. in Photonic Engineering. PhD, Dr.-Ing. in Mechanical Engineering (spacialization in optics)

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Biomedical optics

Year program was founded: 1960
Contact: Erich Steinbeisser
Email: steinbeisser@ito.uni-stuttgart.de
Website: http://www.ito.uni-stuttgart.de
Mailing address: Universität Stuttgart, Institut fuer Technische Optik, Pfaffenwaldring 9, Stuttgart D-70569 Germany

University of Erlangen - Nürnberg
Erlangen, Germany

The Master Programme in Advanced Optical Technologies (MAOT) is a two-year international programme in English at the Faculty of Engineering the University of Erlangen - Nürnberg. It covers all fields of contemporary optical technologies – a key technology for the modern world. MAOT program provides interdisciplinary education at the interface of Engineering, Physics and Medicine and allows for a highly individualised curriculum.

Name of department: University of Erlangen-Nürnberg, Faculty of Engineering

Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 50
Optics/photonics related programs/degrees offered: Masters program available.

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Seven possible major topics: - Optical Metrology - Optical Materials and Systems - Optical Material Processing - Optics in Medicine - Optics in Communication - Computational Optics - Physics of Light

Admission deadlines: April 15, 2021
Contact: Dr. Jürgen Großmann
Email: juergen.grossmann@fau.de
Website: www.maot.studium.fau.de
Mailing address: Friedrich-Alexander-Univ Erlangen-Nürnberg, MAOT, Paul-Gordan-Str 6, Erlangen 91052 Germany

Universitaet Leipzig
Leipzig, Germany

Name of department: Felix Bloch Institute for Solid State Physics

Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: BS - B.Sc.; MS - M.Sc.; Dr. rer. nat.

Type/Description of disciplines/program tracks offered: Physics; Technology; Optics; Photonics

Academic and research specialties related to optics/photonics: Novel optoelectronic semiconductor materials and phenomena; development of devices for key areas such as internet communication, data storage, displays, illumination, environmental monitoring and life sciences. Nanotechnology and self-assembling techniques, novel gain materials, e.g. GaInAsN, group-III nitrides and ZnO-based materials, intersublevel transitions for the mid-infrared spectral range, interaction of active materials with dielectric structures, device preparation and characterization, interfacing of semiconductors and biologically active materials, advanced theoretical modeling.

Admission deadlines: find out here: https://www.uni-leipzig.de/en/international/studying-at-leipzig-university/
Year program was founded: 2007
Contact: Dr. M. Grundmann, Professor
Email: grundmann@physik.uni-leipzig.de
Website: https://research.uni-leipzig.de/hlp/
Mailing address: Universitaet Leipzig, Felix Bloch Institute for Solid State Physics, Linnestr. 5, Leipzig 04103 Germany

Technische Universitaet Dresden
Dresden, Germany

The master’s program in Organic and Molecular Electronics strives to educate young professionals in the cutting edge field of organic electronics. It offers an interdisciplinary study programme comprising physics, chemistry, electrical engineering, and materials science. The close collaboration with industry partners enables a highly practice-oriented education. Organic electronics is an innovative class of electronics with enormous market potential in four key application areas: displays, photovoltaics, lighting, and integrated smart systems. While the technology is novel it is also able to be employed in many current applications, providing reduced cost and low energy manufacturing processes. The field is evolving at a rapid pace, opening many exciting application possibilities and developments. More information: www.tu-dresden.de/physik/ome; www.tu-dresden.de/physik/ome

Name of department: Dresden Integrated Center for Applied Physics and Photonon Materials

Number of core optics/photonics students currently enrolled in a related program: 70
Number of students in optics/photonics related course work: 90
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: MS in Physics (10/year) MS in Organic Electronics (20/year); PhD in Physics (10/year)

Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics

Academic and research specialties related to optics/photonics: Organic light emitting diodes, organic solar cells, organic electronics, ultrafast optics.

Year program was founded: 1908
Contact: Prof. Kari Leo, Department Head
Email: info@iapp.de
Website: http://www.iapp.de
Mailing address: TU Dresden, IAPP, Dresden D-01062 Germany

Universitaet Erlangen - Nurnberg
Erlangen, Germany

The Master Programme in Advanced Optical Technologies (MAOT) is a two-year international programme in English at the Faculty of Engineering the University of Erlangen - Nürnberg. It covers all fields of contemporary optical technologies – a key technology for the modern world. MAOT program provides interdisciplinary education at the interface of Engineering, Physics and Medicine and allows for a highly individualised curriculum.

Name of department: University of Erlangen-Nürnberg, Faculty of Engineering

Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 50
Optics/photonics related programs/degrees offered: Masters program available.

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Seven possible major topics: - Optical Metrology - Optical Materials and Systems - Optical Material Processing - Optics in Medicine - Optics in Communication - Computational Optics - Physics of Light

Admission deadlines: April 15, 2021
Contact: Dr. Jürgen Großmann
Email: juergen.grossmann@fau.de
Website: www.maot.studium.fau.de
Mailing address: Friedrich-Alexander-Univ Erlangen-Nürnberg, MAOT, Paul-Gordan-Str 6, Erlangen 91052 Germany

Optics and Photonics Education Directory 2020/2021
University of Oldenburg
Oldenburg, Germany
Name of department: Institute of Physics
Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 15
Optics/photonics related programs/degrees offered: Bachelor: BEng and BSc in Physics Engineering (specialization Laser Technology); Bachelor in Physics (Optical Metrology); Masters: MSc in Physics Engineering (specialization Laser Technology), Master in Physics (Optical Metrology)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Biomedical optics
Academic and research specialties related to optics/photonics: Field of Specialization for Bachelor/Master in Physics: Photonics / Optical Metrology
Year program was founded: 1991
Contact: Emake Lorincz, Associate Professor
Email: lorincz@eik.bme.hu
Website: http://www.fat.bme.hu/
Mailing address: Budapest Univ. of Technology & Economics, Dept. of Atomic Physics, Budafoki u 8, Budapest H-1111 Hungary

University of Iceland
Reykjavík, Iceland
Name of department: Faculty of Physical Sciences
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Bachelor of Engineering in Electronic Engineering. Master of Philosophy in Electrical and Electronic Engineering. PhD in Electrical and Electronic Engineering
Type/Description of disciplines/program tracks offered: Electrical engineering
Admission deadlines: 31 March; BS - 5 June
Year program was founded: 1991
Contact: Ari Olafsson, Photonics Research Professor
Email: ario@hi.is
Website: https://english.hi.is/faculty_of_physical_sciences
Mailing address: Háskóli Íslands, Sæmundargata 1, Reykjavik Iceland

B.P. Poddar Institute of Management & Technology
Kolkata, India
B.P. Poddar Institute of Management & Technology is one of the premier institutes of the eastern India offering academic programs in different disciplines of Engineering & Technology. Theory course on Optical Communication, as well as laboratory is included in the curriculum. One advanced communication lab has been developed with the financial help from the Govt. of India. Besides these PhD thesis works are also being supervised by three active research groups of the department jointly with the University of Calcutta and Maulana Abul Kalam Azad University of Technology (Formerly West Bengal University of Technology) in the field of Optical Communication and Applied Optics.
Name of department: Electronics & Communication Engg.
Number of core optics/photonics students currently enrolled in a related program: 150
Number of students in optics/photonics related course work: 400
Optics/photonics related programs/degrees offered: B.Tech in Electronics & Communication Engg. with emphasis in Optical Communication and Physics minor
Type/Description of disciplines/program tracks offered: Physics; Fiber optics; Other False
Year program was founded: 1999
Contact: Dr. Shila Ghosh, Professor
Email: ghosh_shila@yahoo.co.in
Website: http://bppimt.ac.in
Mailing address: 137, VIP Road, Poddar Vihar, Kolkata West Bengal 700052 India

University of Hong Kong
Hong Kong
Name of department: Electrical and Electronic Engineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Bachelor of Engineering in Electronic Engineering; Master of Philosophy in Electrical and Electronic Engineering; PhD in Electrical and Electronic Engineering
Type/Description of disciplines/program tracks offered: Electrical engineering
Year program was founded: 1911
Contact: Edmund Lam, Professor
Email: elam@eee.hku.hk
Website: http://www.eee.hku.hk
Mailing address: Univ. of Hong Kong, Dept of Electrical & Electronic Engineering, Rm 601 Chow Yei Ching Bldg., Pokfulam Road, Hong Kong

Budapest University of Technology and Economics
Budapest, Hungary
On credit system of Engineering Physics education (compulsory and facultative courses) detailed info is available on http://newton.phy.bme.hu/education/credit/index_eng.html. In the last 2 years students make 3 semesters directed individual studies including preparation of the thesis work in applied optics. Research topics for Ph.D. degrees are in the areas of optical data storage, opto-electronics, acousto-optical devices and spectroscopy.
Name of department: Atomic Physics
Number of core optics/photonics students currently enrolled in a related program: 23
Number of students in optics/photonics related course work: 39
Number of optics/photonics related courses offered in this program: 23
Optics/photonics related programs/degrees offered: BSc in Physics, specialization in Applied Physics. MSC in Physics, specialization Applied Physics. PhD in Applied Physics
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics
Academic and research specialties related to optics/photonics:
• Optical data storage • Acousto-optic modulators, deflectors, Q switches, mode-lockers, filters, fsec pulse shapers • Integrated optics, guided wave devices, fiber optic systems • Optical signal processing • New optical technologies • Modelling and design of optical systems • Nonlinear optical devices • Photo-acoustic and time-resolved fluorescence spectroscopy of biological materials • Light sources • Optical measurement techniques • Optics for medical diagnostics • Laser material processing • Coherent infrared differential absorption lidar • Holography • Spectroscopic measurement techniques (NIR, VIS, fluorescence, LIBS, color) • Displays • Photovoltaics
Year program was founded: 1991
Contact: Emoke Lorincz, Associate Professor
Email: lorincz@eik.bme.hu
Website: http://www.fat.bme.hu/
Mailing address: Budapest Univ. of Technology & Economics, Dept. of Atomic Physics, Budafoki u 8, Budapest H-1111 Hungary

University of Iceland
Reykjavík, Iceland
Name of department: Faculty of Physical Sciences
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Bachelor of Engineering in Electronic Engineering. Master of Philosophy in Electrical and Electronic Engineering. PhD in Electrical and Electronic Engineering
Type/Description of disciplines/program tracks offered: Electrical engineering
Year program was founded: 1991
Contact: Edmund Lam, Professor
Email: elam@eee.hku.hk
Website: http://www.eee.hku.hk
Mailing address: Univ. of Hong Kong, Dept of Electrical & Electronic Engineering, Rm 601 Chow Yei Ching Bldg., Pokfulam Road, Hong Kong

HONG KONG

B.P. Poddar Institute of Management & Technology
Kolkata, India
B.P. Poddar Institute of Management & Technology is one of the premier institutes of the eastern India offering academic programs in different disciplines of Engineering & Technology. Theory course on Optical Communication, as well as laboratory is included in the curriculum. One advanced communication lab has been developed with the financial help from the Govt. of India. Besides these PhD thesis works are also being supervised by three active research groups of the department jointly with the University of Calcutta and Maulana Abul Kalam Azad University of Technology (Formerly West Bengal University of Technology) in the field of Optical Communication and Applied Optics.
Name of department: Electronics & Communication Engg.
Number of core optics/photonics students currently enrolled in a related program: 150
Number of students in optics/photonics related course work: 400
Optics/photonics related programs/degrees offered: B.Tech in Electronics & Communication Engg. with emphasis in Optical Communication and Physics minor
Type/Description of disciplines/program tracks offered: Physics; Fiber optics; Other False
Year program was founded: 1999
Contact: Dr. Shila Ghosh, Professor
Email: ghosh_shila@yahoo.co.in
Website: http://bppimt.ac.in
Mailing address: 137, VIP Road, Poddar Vihar, Kolkata West Bengal 700052 India

DELHI TECHNOLOGICAL UNIVERSITY
DELHI, INDIA

Delhi Technological University
Delhi, India

HUNGARY

INDIA

Optics and Photonics Education Directory 2020/2021

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of science and technology. The objective of the department is to create future generations of skilled Engineers and Scientists by providing quality education through cutting edge technologies and innovative teaching techniques so as to make them well equipped to face present and future challenges and their overall sustainable professional growth. There are various courses and laboratories related to Optics and Photonics in its curriculum. An advanced center called “TIFAC-CORE in Fiber Optics and Optical Communication” is also established with a dedicated program in the area of Optics and Photonics, under Technology Vision-2020 program of Govt. of India. The Department of Applied Physics offers the following academic degree programs dedicated to Optics and Photonics: B.Tech (Engineering Physics) with major/minor in Photonics; M.Tech (Microwave & Optical Communication Engineering), M.Tech (Nano Science and Technology) with electives on Nano Photonics, M.Sc. (Applied Physics) with foundation course of Applied Optics and major/minor projects on Optics and Photonics. Besides these academic program, an active research group consisting of five faculty members and over a dozen Ph.D. students are involved in R&D in the area related to Optics and photonics.

Name of department: Department of Applied Physics
Number of core optics/photonics students currently enrolled in a related program: 310
Number of students in optics/photonics related course work: 1700
Number of optics/photonics related courses offered in this program: 21
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Photonic crystal fibers, Photonic band gap devices, Quantum size devices, EDFA, Raman amplifiers, Electron waveguides and Multiple access techniques in optical communication, Quantum Computation and Information theory, Imaging and Optical Signal Processings, Molecular Photonics etc.

Admission deadlines: Application notices are put up on the official websites (www.dtu.ac.in) and generally fall in May/June for B.Tech. program and June/July for M.Tech and M. Sc. For the Ph.D. program, the application starts in January and June. Refer to www.dtu.ac.in
Year program was founded: 2009
Contact: Devendra Mohan, Professor
Email: devendra@iitr.ac.in
Mailing address: Department of Physics, IIT Roorkee, Roorkee, Uttarakhand 247667

Noval of department: Manipal Academy of Higher Education
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 15
Number of students in optics/photonics related course work: 50
Optics/photonics related programs/degrees offered: Bachelor’s Degree BSc(H); Master of Technology in Applied Optics; Master of Technology in Optoelectronics & Optical Communication; Master of Technology in Solid State Materials. Doctoral: Doctor of Philosophy (Title of the thesis is mentioned in the Degree)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Contact: Anuag Sharma, Professor & Head of the Department
Email: hodphysics@admin.iitd.ac.in
Website: http://physics.iitd.ac.in
Mailing address: Department of Physics, Indian Institute of Technology Delhi, New Delhi 110016 India

Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 15
Number of students in optics/photonics related course work: 50
Optics/photonics related programs/degrees offered: Bachelor's Degree BSc(H); Master of Technology in Applied Optics; Master of Technology in Optoelectronics & Optical Communication; Doctor of Philosophy (Title of the thesis is mentioned in the Degree)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Contact: Anuag Sharma, Professor & Head of the Department
Email: hodphysics@admin.iitd.ac.in
Website: http://physics.iitd.ac.in
Mailing address: Department of Physics, Indian Institute of Technology Delhi, New Delhi 110016 India
The Department of Applied Optics and Photonics of Calcutta University conducts M.Sc. Nanoscience and Technology covers most aspects of the subject and lays some emphasis on optical principles involved in Biomedical Imaging and laser instrumentation. The M.Tech. course in Astronomical Instrumentation covers most aspects of Astronomical Instrumentation including optical design, Image Science, coherence theory etc. During the third semester, students of this course undergo internship at the different facilities and observatories of IIA, Bangalore. After the 4th semester project work, students are mostly absorbed as PhD students. The Department also has a number of research scholars pursuing Ph.D. (Tech.) offered by Calcutta University.

**Name of department:** Applied Optics and Photonics

**Number of core optics/photonics students currently enrolled in a related program:** 80

**Number of students in optics/photonics related course work:** 20

**Number of optics/photonics related courses offered in this program:** 4

**Optics/photonics related programs/degrees offered:** 

- Certification: Certificate course in Laser Applications in Biology and Medicine
- Certificate course in Nanoscience and Technology, Masters: M.Sc. Photonics; M.Sc. Nanoscience and Technology

**Type/Description of disciplines/program tracks offered:** 

- Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

**Admission deadlines:** 7/6/2020

**Year program was founded:** 2009

For more details check the websites: 

- https://manipal.edu/damp/programs.html
- https://manipal.edu/content/dam/manipal/mu/damp/documents/MSc%20Photonics.pdf

**Contact:** Dr. Ajeet Kumar Patil, Associate Professor & Faculty Adviser, SPIE Manipal Univ. Chapter

**Email:** ajeetkumar.p@manipal.edu

**Website:** https://manipal.edu/damp.html

**Address:** Department of Atomic and Molecular Physics, LG-01, AB-S, LG-01, AB-S, MIT, Manipal Academy of Higher Education, Manipal Karnataka 576104 India

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**Techno India**

**Kolkata, India**

**Name of department:** Electronics and Instrumentation Engineering

**Number of students in optics/photonics related course work:** 70

**Number of optics/photonics related courses offered in this program:** 2

**Optics/photonics related programs/degrees offered:** Bachelor's

**Type/Description of disciplines/program tracks offered:** Electrical engineering

**Year program was founded:** 2005

**Contact:** Saikat Majumder, Assistant Professor

**Email:** saikat2004@gmail.com

**Website:** https://www.ticollege.ac.in/index.php?id=19

**Address:** EM 4/1 Sector V, Salt Lake, Kolkata West Bengal 700091 India

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**University of Calcutta**

**Kolkata, India**

The Department of Applied Optics and Photonics of Calcutta University conducts • 4-year (8 Semester) B.Tech. course in Optics and Optoelectronics after Higher Secondary (Class 12) Through the State Joint Entrance Examination • 5+3 Physics or Electronics major students can have lateral entry in the 3rd Semester of the above course. • 2-year (4 semester) M.Tech. course in Optics and Optoelectronics for students with B.Tech. in Electronics/ communications/installation/Optics & Optoelectronics and M.Sc. in Physics • 2-year M.Tech-PhD programme in Astronomical Instrumentation in collaboration with Indian Institute of Astrophysics, Bangalore. Candidates are selected through a national level entrance test. Covers all aspects of Astronomical Instrumentation including optical design • 2-year M.Tech. course in Biomedical Instrumentation. Brief description of the courses: Most areas of optical technology including Optical System Design, Fibre Optics and optical waveguides, Lasers, Nonlinear Optics, Adaptive Optics are taught in the B.Tech courses. The final semester is completely devoted to project work. Advanced optics topics are taught in the 2-year M.Tech. course in Optics and Optoelectronics. The final year is completely devoted to project work. The M.Tech. course in Biomedical Instrumentation covers most aspects of the subject and lays some emphasis on optical principles involved in Biomedical Imaging and laser instrumentation. The M.Tech. course in Astronomical Instrumentation covers most aspects of Astronomical Instrumentation including optical design, Image Science, coherence theory etc. During the third semester, students of this course undergo internship at the different facilities and observatories of IIA, Bangalore. After the 4th semester project work, students are mostly absorbed as PhD students. The Department also has a number of research scholars pursuing Ph.D. (Tech.) offered by Calcutta University.

**Name of department:** Applied Optics and Photonics

**Number of core optics/photonics students currently enrolled in a related program:** 80

**Number of students in optics/photonics related course work:** 20

**Number of optics/photonics related courses offered in this program:** 4

**Optics/photonics related programs/degrees offered:** 


**Type/Description of disciplines/program tracks offered:** 

- Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics; Astronomical optics

**Academic and research specialties related to optics/photonics:** 

- Lens design; optical image processing; laser beam shaping; polarization optics, polarization phase shifting interferometry; diffractive optical elements, astronomical optics.

**Admission deadlines:** Please visit the University website (www.caluniv.ac.in) for admission announcements.

**Year program was founded:** 1979

**Contact:** Dr. Kailol Bhattacharyya, Head of Applied Optics & Photonics Dept.

**Email:** kbaop@caluniv.ac.in

**Website:** http://www.caluniv.ac.in/academic/departments/App_optics_photonics.html

**Address:** University of Calcutta, Applied Optics & Photonics Dept., Technology Campus, JD-2, Sector III Kolkata, Kolkata 700 106 India

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**University of Engineering & Management**

**Kolkata, India**


**Name of department:** Research and Development Council

**Number of core optics/photonics students currently enrolled in a related program:** 200

**Number of students in optics/photonics related course work:** 2500

**Number of optics/photonics related courses offered in this program:** 10

**Type/Description of disciplines/program tracks offered:** 

- Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

**Year program was founded:** 2015

**Contact:** Indrani, Bhattacharya

**Email:** indrani.bhattacharya@iemcal.com

**Website:** http://www.uem.edu.in/

**Address:** University Area, Plot No.III – B/5, Main Arterial Road, New Town, Action Area - III, Kolkata 700160 India
**IRAN**

University of Tehran  
Tehran, Iran

We offer MSc and PhD programs in Optics, lasers physics, light-matter interaction, Plasma physics, and Photonic materials.

Name of department: Dept. of Physics  
Type/Description of disciplines/program tracks offered: Physics; Optics

Number of core optics/photonics students currently enrolled in a related program: 30  
Number of students in optics photonics related course work: 30  
Number of optics/photonics related programs/degrees offered: Bachelors:


**IRELAND**

National University of Ireland,  
Galway  
Galway, Ireland

We offer MSc and PhD programs in Optics, lasers physics, light-matter interaction, Plasma physics, and Photonic materials.

Name of department: School of Physics  
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Biomedical optics; Fiber optics

Number of core optics/photonics students currently enrolled in a related program: 20  
Number of students in optics/photonics related course work: 750  
Number of optics/photonics related courses offered in this program: 5  
Number of optics/photonics related programs/degrees offered: Bachelor of Science BS (Physics - degree options in Applied, Astrophysics, Biomedical, Theoretical), MS in Astronomical Instrumentation and Technology (includes Telescopes and optical instruments); MS in Key Enabling Technologies (including Photonics); MS in Medical Physics; MS in Physics by research (includes Lasers & Optics research activities). PhD in Physics (includes Lasers & Optics and Biophotonics research activities).

Academic and research specialties related to optics/photonics: Adaptive optics, smart optics, atmospheric characterization, scattering and propagation, optical engineering, high-power laser applications, optical spectroscopy, astronomical imaging and instrumentation, Biophotonics, Imaging, Optical Coherence Tomography, Photoacoustics, Image Processing

**ISRAEL**

Ben Gurion University of the Negev  
Beer-Sheva, Israel

The Electrooptical Engineering (EOE) unit at BGU was established in the year 2000 to strengthen the research and education in electrooptics and photonics engineering at BGU. The unit offers graduate studies (M.Sc and PhD) in variety of fields in electrooptics and photonics such as image processing, biomedical optics, liquid crystal devices, optical imaging, atmospheric optics, optical computing, nanophotonics, remote sensing, photovoltaics, optical communications, atom optics and lasers. Presently we have around 100 M.Sc student and 20 PhD students. During the last 10 years over 300 M.Sc students and 30 PhD students graduated from the EOE unit. Over 50 publications are indexed yearly in the EOE department staff and students. For the M.Sc program the student can choose between a thesis or final project tracks. In the thesis track the student has to study 8 courses and to perform an extended research and write a thesis. In the non-thesis or final project track the student has to study 10 courses and perform a mini project and write a report. Every student has to give a final seminar. The EOE academic staff composed...
of 4 core staff and over 20 staff members from other departments within the faculty of engineering sciences as well as from the Physics and Chemistry departments who participate both in the teaching and supervision of students. The image processing activity even involves researchers from other departments such as the geography and the department of industrial engineering. Wide selection of courses are offered: Introduction to optical engineering, imaging systems 1&2, mathematical principles in electrotechnics, optical metrology, pattern recognition, solar cells, semiconductor and photonics devices, quantum optics, electrotechnics lab, optics and photonics lab, and optical telecommunication lab. To celebrate the 10th anniversary, the EOE unit organized the “Optics and Photonics Day” in May 16th, 2011. Links: Department of Electrooptic Engineering: http://cmsgprod.bgu.ac.il/engn/electrop/. SPIE BGU Students Chapter: https://sites.google.com/site/spiebgu. Contacts: Martine Golan, Fax: +972-(0)8-6479494, Tel. +972-(0)8-6461448, Email: martine@bgu.ac.il

Name of department: Electro-Optical Engineering
Number of core optics/photonics students currently enrolled in a related program: 90
Number of optics/photonics related courses offered in this program: 25
Optics/photonics related programs/degrees offered: M.Sc. in Electrotechnical Engineering. Ph.D in Electrotechnical Engineering.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics.
Academic and research specialties related to optics/photonics: imaging systems and image processing, optical communication, lasers and quantum optics, optical computing, biomedical optics, liquid crystals, optoelectronic sensors and VLSI smart cameras.
Year program was founded: 1999
Contact: Prof. Adrian Stern, Head of the Electro-Optical Engineering Department
Email: stern@bgu.ac.il
Website: http://cmsgprod.bgu.ac.il/eng/engn/electrop
Mailing address: Ben Gurion Univerof the Negev, PO Box 653, Beer-Sheva 84105 Israel

Tel Aviv University
Tel Aviv, Israel

Name of department: School of Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 60
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: BSEE with specialization in electro-optics. MS with research in optics-related topics. PhD with research in optics-related topics.
Type/Description of disciplines/program tracks offered: Electrical engineering
Academic and research specialties related to optics/photonics: lasers, nonlinear optics, integrated optics, optical communications, optical signal processing, microwave photonics
Year program was founded: 1973
Contact: Dr. Ady Arieh, Professor
Email: ady@eng.tau.ac.il
Website: http://www.tau.ac.il
Mailing address: Tel Aviv University, School of Electrical Engineering, Tel Aviv 69978 Israel

Weizmann Institute of Science
Rehovot, Israel

Name of department: Physics of Complex Systems and Chemical Physics
Number of core optics/photonics students currently enrolled in a related program: 65
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Masters and doctoral degrees available.
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Biomedical optics

Academic and research specialties related to optics/photonics: Lasers, nonlinear optics, quantum optics and quantum sensing, ultra-fast optics, atomic and molecular optics, laser cooling, holography, microscopy, diffractive optics, photonics devices, and nano-optics.
Year program was founded: 1970
Contact: Dr. Ofer Firstenberg, Senior Scientist
Email: ofer.firstenberg@weizmann.ac.il
Website: http://www.weizmann.ac.il/physics/AMOS/
Mailing address: Weizmann Institute of Science, Physics of Complex Systems Dept., Rehovot 76100 Israel
Academic and research specialties related to optics/photonics:
International Collaboration/Functional Photonics, International Promotion Program with MAScIR, FSR Mohammed V University, Morocco. Plasmonics/Metamaterials and Devices, Core to Core Program with China, Taiwan, Singapore and other 7 countries.

Please see the members in Photonics Center home page for a listing of Photonics Center faculty names and specializations.

Contact: Junichi Takahara, Professor
Email: takahara@ap.eng.osaka-u.ac.jp
Website: http://www.parc.osaka-u.ac.jp/en/
Mailing address: Photonics Center, Osaka University, P3, 2-1 Yamadaoka, Suita Osaka 565-0871 Japan

Utsunomiya University

Utsunomiya University’s Department of Optical Engineering was founded in 2008 to gather together optics researchers in one place, and to provide education in optics for students entering the many optics-related industries in Japan. The program has attracted students from all over the world, including Mexico, Malaysia, and India, and holds cooperative agreements with over 10 other universities worldwide. The department also enjoys close relationships with the local optics industry. The Department of Optical Engineering currently offers the following degree programs: Bachelor of Science in Optical Engineering (beginning in 2017); Master of Science in Optical Engineering; PhD in Advanced Interdisciplinary Sciences with a focus on Optical Sciences.

Name of department: Department of Optical Engineering
Number of core optics/photonics students currently enrolled in a related program: 68
Number of students in optics/photonics related course work: 68
Number of optics/photonics related courses offered in this program: 30
Optics/photonics related programs/degrees offered: MS Optical Engineering, PhD Advanced Interdisciplinary Sciences
Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics; Biomedical optics
Academic and research specialties related to optics/photonics: Optical systems design; biomedical imaging; polarization sensing; infrared sensing; lasers; photonic devices; optical data storage; optical communications.

Year program was founded: 2008
Contact: Nathan Hagen, Assistant Professor
Email: nh@hagenlab.org
Website: http://www.eng.utsunomiya-u.ac.jp/intro_opt.html
Mailing address: 7-1-2 Yoto, Department of Optical Engineering, Utsunomiya Tochigi 321-8585 Japan

Yamagata University

Yonezawa, Japan

Name of department: Electrical engineering
Number of core optics/photonics students currently enrolled in a related program: 5
Number of students in optics/photonics related course work: 5
Number of optics/photonics related courses offered in this program: 0
Optics/photonics related programs/degrees offered: Masters and doctoral degrees available.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Contact: Manabu Sato, Professor
Email: msato@yz.yamagata-u.ac.jp
Website: http://msatolab.yz.yamagata-u.ac.jp/index.html
Mailing address: Johnan 4-3-16, Yonezawa Yamagata 992-8510 Japan

Kuwait Institute for Scientific Research

Safat, Kuwait

Interdisciplinary program of applied optics engineering
Name of department: Materials Science and Photo-Electronics Lab., RE Program, EBR Center.
Number of core optics/photonics students currently enrolled in a related program: 5
Number of students in optics/photonics related course work: 5
Number of optics/photonics related courses offered in this program: 2
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics
Academic and research specialties related to optics/photonics: Fundamentals and Applications of Optical Interferometry as NDT Techniques for Materials Evaluation in Different Severe Environments (complex media)
Year program was founded: 1988
Contact: Dr. K. Habib, Ph.D., Fellow of SPIE & Senior member of OSA, Senior Research Scientist
Email: khaledhabib@usa.net
Website: http://www.kisr.safat.edu.kw or E-mail: public_relations@safat.kisr.edu.kw
Mailing address: Materials Science and Photo-Electronics Lab., RE Program, EBR Center, KISR, PO Box 24885, Safat 13109 Kuwait

Multimedia University

Cyberjaya, Malaysia

Name of department: Faculty of Engineering
Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering
Contact: Prof. Hin Yong Wong, Email: enginfo@mmu.edu.my
Website: http://www.mmu.edu.my/
Mailing address: Multimedia Univ, Faculty of Engineering, Rm b- BR2038 1st Floor Block B, FOE, Cyberjaya Selangor Darul Ehsan 63100 Malaysia

Universiti Teknologi Malaysia

Johor Bahru, Malaysia

The Laser Center offers students the opportunity to develop their research and communication skills, and to engage with exciting projects in photonics. The institute immerses its students in an environment that fosters collaboration, team working, and the unique opportunity to work with photonic staff on prototype development of products through its partnership with other divisions in University Technology Malaysia(UTM) and with UTM’s global linkages. Our mission is to disseminate of products, skills and knowledge in photonic science to meet the present and future needs of the nation and its manpower and to support the nation’s aspiration of becoming a developed country through the field of photonic science.

Name of department: Laser Center, Ibnun Sina Institute for Scientific and Industrial Research (ISI-SIR)
Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 200
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Bachelors: B.Sc (Hons) (Physics), B.Sc (Hons ) (Industrial Physics), B.Eng (Elect.Eng). All are 4-year courses. Masters: M.Sc (Physics)-by research. M.Sc (Mixed Mode Physics) program-1.5year, M.Eng (Telecommunications)-by research. M.Eng (Mixed mode Elect.Eng) program, Doctoral: Ph.D
**Centro de Investigacion e Innovacion Technology del IPN**

Mexico City, Mexico

**Name of department:** Postgrad Studies

**Number of core optics/photonics students currently enrolled in a related program:** 60

**Number of students in optics/photonics related course work:** 100

**Type/Description of disciplines/program tracks offered:** Physics, Electrical engineering, Optics, Photonics, Biomedical optics, Fiber optics

**Admission deadlines:** Applications open throughout the year. Entrance twice a year.

**Contact:** Jose Alfredo Alvarez-Chavez, Dr.

**Email:** jalvarezch@ipn.mx

**Website:** http://www.ciitec.ipn.mx/

**Mailing address:** Cerrada Cacati S/N, Col. Santa Catarina Azcapotzalco, Mexico City 2250 Mexico

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**Centro de Investigacion en Optica, A. C. (CIO)**

Leon, GTO Mexico

The Master of Science (Optics) has the objective of generating human resources that possess, as a result of their studies, ample theoretical and practical knowledge in the field of Optics, as well as basic methodological abilities in popularization, technological innovation and research. The program consists of 6 terms completed in 24 months, with 9 core curriculum courses, 3 electives, and 3 thesis elaboration courses. Additionally, a thesis must be written to obtain the degree. The Master of Optomechatronics objective is to generate human resources at a master’s level with theoretical and practical knowledge, capable of developing opto-mechanic, opto-electronic, opto-computer and/or opto-mechatronic systems that have a technological impact on the regional and national industry. The program consists of 6 terms completed in 24 months, with 12 core curriculum courses, 4 electives, 2 Thesis and Link to Industrial Sector courses, and 1 for thesis. Furthermore, a thesis must be written to obtain the degree. The PhD in Optical Sciences has the objective of generating human resources that participate in the development of science and technology in the field of Optics as researchers of the highest quality and level within their field of competence, with the mission of generating new knowledge and collaborate in the progress of basic and applied science. The program consists of 12 terms completed in 48 months, with 5 core curriculum courses, 2 electives, and 5 thesis seminar courses, and 5 of thesis elaboration. A thesis must be completed to obtain the degree.

**Name of department:** Graduate Studies Office

**Number of core optics/photonics students currently enrolled in a related program:** 160

**Number of students in optics/photonics related course work:** 160

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**Instituto Nacional de Astrofisica, Optica y Electronica (INAOE)**

Sta Ma Tonantzintla, Mexico

INAOE is the oldest educational center devoted specifically to optics in Mexico, besides astronomy and electronics. It has graduated over 200 MSc's and PhD's in optics since 1972. INAOE began its activities in 1941 as “Observatorio Astronomico de Tonantzintla” and as INAOE in 1971 to promote astronomical instrumentation. Since then has grown to cover most of the optical specialties with researchers formed around the world. Overall, INAOE is the Mexican institution with the second highest scientific impact in Mexico. Almost all optics activity in Mexico can be traced back to INAOE. MSc in optics program is two year long. 5 mandatory and 5 elective courses have to be taken followed by a thesis. Starting 2017 there are two admission periods each year (January and August). Application deadlines are May and October each year. For the PhD in Optics program, student coming from a non-optical MSc program must present a qualifying examination within the first year. For students coming from a non-optical MSc program, mandatory optics MSc program courses have to be taken followed by a qualifying examination. Within the first year and a half a candidacy exam presenting the PhD project must be defended. The PhD in optics program is 4 years long without a course work. The research journal papers are required before dissertation defense. Scholarships: Mexican students are supported by CONACYT (the Mexican National Council of Science and Technology). The academic program is open for worldwide students. All the non-Mexican students can search scholarship from AEO, SRE, UN and others. International students can apply for CONACyT scholarship after admitted to the program. Non-resident tuition applies for non-mexican applicants. INAOE provides support documentation for FMS immigration form.

**Name of department:** Dirección de Formacion Academica

**Number of core optics/photonics students currently enrolled in a related program:** 150

**Number of students in optics/photonics related course work:** 150

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**Universiti Teknologi Malaysia (UTM)**

Malaysia (UTM), Nanophotonics Research Group, Nanotechnology

**Year program founded:** 1990

**Contact:** Professor Dr. Jallil Ali, Head of Nanophotonics Research Group

**Email:** jallilali@utm.my

**Website:** http://www.lasercenter.utm.my

**Mailing address:** Physics Department, Science Faculty, Universiti Teknologi Malaysia (UTM), Nanophotonics Research Group, Nanotechnology Research Alliance, UTM, 8130 Johor Bahru, Malaysia

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**CONACYT**

**Year program was founded:** 1990

**Contact:** Profesor Dr. Jalil Ali, Head of Nanophotonics Research Group

**Email:** jallilali@utm.my

**Website:** http://www.lasercenter.utm.my

**Mailing address:** Physics Department, Science Faculty, Universiti Teknologi Malaysia (UTM), Nanophotonics Research Group, Nanotechnology Research Alliance, UTM, 8130 Johor Bahru, Malaysia

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**Universiti Teknologi Malaysia (UTM)**

Malaysia (UTM), Nanophotonics Research Group, Nanotechnology

**Year program founded:** 1990

**Contact:** professr Dr. Jalil Ali, Head of Nanophotonics Research Group

**Email:** jallilali@utm.my

**Website:** http://www.lasercenter.utm.my

**Mailing address:** Physics Department, Science Faculty, Universiti Teknologi Malaysia (UTM), Nanophotonics Research Group, Nanotechnology Research Alliance, UTM, 8130 Johor Bahru, Malaysia

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**CICESE**

Ensenada BC Mexico

**Name of department:** Applied Physics

**Number of core optics/photonics students currently enrolled in a related program:** 60

**Number of students in optics/photonics related course work:** 60

**Type/Description of disciplines/program tracks offered:** Physics, Optical engineering, Optics, Photonics, Biomedical optics, Fiber optics

**Contact:** Alfredo Armenta-Ramade

**Email:** aarmenta@cicese.mx

**Website:** www.cicese.mx

**Mailing address:** Carretera Ensenada-Tijuana 3918, Zona Playitas, Ensenada B.C 22860 Mexico

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**Optics and Photonics Education Directory 2020/2021**
Delft University of Technology
Delft, Netherlands

Physics is concerned with the discovery and application of the laws of nature. It elucidates, in terms of basic principles, phenomena that range from the very small to the unimaginably large, from subatomic particles to the universe. The pace of discovery is often set by the speed of technological and engineering developments. The applied physicist is educated to contribute to the solution of the physics aspects of any scientific technical problem. The MSc programme in Applied Physics at TU Delft combines the skills and management of a standard engineering programme with the depth and insight that is expected from a physicist. Completion of the programme prepares graduates for contributions and advancements in any number of industries, research institutes or academia. Recent advances in nanotechnology, seismic exploration, robotics, medical imaging, biophysics, communications technology, and energy-efficient industrial processing, all rely on exploring the mechanisms and limits of the physical world. It is for these types of challenges that we train the physicists in Delft.see: www.tnw.tudelft.nl/
msc

Name of department: Imaging Science & Technology
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 10
Number of optics/photonics related courses offered in this program: 4

Optics/photonics related programs/degrees offered: BSc in Applied Physics (in Dutch language), MSc Optics in Science & Technology (Erasmus Mundus Master course), MSc in Applied Physics - track: Imaging Science & Technology; See: www.ist.tudelft.nl and research groups for possible PhD positions

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Technology; Optics; Photonics; Biomedical optics

Academic and research specialties related to optics/photonics: - interferometry - advanced lithographic imaging methods - super high-density optical storage - teraherz science & technology - Image-based measurement and analysis research projects - novel electron sources - aberration corrector - Auger spectroscopy in TEM

Year program was founded: 1928
Contact: International Recruitment Officer, International Recruitment Officer
Email: msc-tnw@tudelft.nl
Website: http://www.tnw.tudelft.nl
Mailing address: TU Delft, Faculty of Applied Sciences, Lorentzweg 1, 2628 CJ, Delft Netherlands

Nicholas Copernicus University
Torun, Poland

All students of physics are obliged to take one semester course of optics. The following courses are offered to the students of different specializations: Detection of light, Optoelectronics of semiconductors,
Optical spectroscopy, Laser optics, Laser applications, Solid state spectroscopy, Eye and optometry, Introduction to quantum optics, Quantum electronics. (all courses are in Polish).

Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 0
Number of optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: BSc in experimental physics. MSc in physics/ specialization in: experimental and theoretical physics, MSc in technical physics specialization in medical physics. PhD
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics materials for detection of ionizing radiations; Biomedical optics
Academic and research specialties related to optics/photonics:
All students are obliged to take a one-semester course of optics. The following courses are offered to the students of different specialties: Laser optics, Everyday optics, Electrodynamics and optics, Characterizing materials with methods of nonlinear optics, Detection of light, Interaction of atomic systems and light, Introductory quantum optics, Physics and applications of lasers, Elements of quantum information in applications, Optoelectronics, Eye and optometry, Laboratory of opto- and microelectronics, Photometry and astrospectroscopy, Biospecroscopy, Luminescence and photoconductivity of semiconductors.
Contact: Dr. Andrzej Kowalczyk, Professor
Email: akowal@fizyka.umk.pl
Website: http://www.fizyka.umk.pl
Mailing address: Nicholas Copernicus University, Dept. of Physics, Grudziadzka 5, Torun 87-100 Poland

University of Warsaw
Warsaw, Poland
Name of department: Faculty of Physics
Number of core optics/photonics students currently enrolled in a related program: 100
Number of students in optics/photonics related course work: 1000
Number of optics/photonics related courses offered in this program: 50
Optics/photonics related programs/degrees offered: About this program: http://www.fuw.edu.pl/first-degree-studies.html. BSc in Physics; in Polish, 3 years, BSc in Nanostructure Engineering; in Polish, 3 years, BSc within European Programme in Ophthalmic Optics and Optometry; in Polish, 4 years. About this program: http://www.fuw.edu.pl/second-degree-studies.html. MSc in Physics, in English or Polish (specializations including Optics and Photonics), 2 years. PhD in Physics; http://www.fuw.edu.pl/phd-studies.html.
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Biomedical optics
Academic and research specialties related to optics/photonics:
Realization of theses during Physics studies is also available at University of Warsaw independent branch, Centre of New Technologies (CENT UW) - an interdisciplinary unit focused on research and technology development. Three quantum optics-related laboratories are operating there in cooperation with Faculty of Physics. Students leading faculty.
Admission deadlines: http://rekrutacja.uw.edu.pl/en/
Contact: Krzysztof Turzyński, dr hab.
Email: krzysztof.turzynski@fuw.edu.pl
Website: optics.uw.edu.pl
Mailing address: University of Warsaw, Faculty of Physics, Pasteura 5, Warsaw 02-093 Poland

Warsaw University of Technology
Warsaw, Poland
Bachelor course: The duration of the study is 7 semesters (3.5 academic years). During the first 4 semesters the basic technical knowledge is delivered (120 ECTS split into 4 equally loaded semesters) and the next 3 semesters are focused on the photonics engineering specialization (75 ECTS split into 3 equally loaded semesters and 15 ECTS – diploma thesis). The profile of the graduate corresponds with the challenges of the 21st century. It has basic knowledge as well as general and specialist knowledge, which provides a basis for designing, manufacturing, testing and operating opto-mechatronic systems and devices. The basic knowledge includes first off all mathematics, physics, mechanics and electronics – especially the branches useful while designing precision opto-mechatronic devices. The program of the first level Photonics Engineering specialization is developed as a high quality educational offer in the area of optomechatronics, especially in: building of optical and optoelectronic equipment and its applications in opto-numerical methods of inspection, e.g. holography cameras, spectrometers, multimedia devices and multi-functional interferometers for different scale objects testing (from big engineering structures up to microelements MEMS/MOEMS). The specialist knowledge, delivered during this course, prepares the graduate for a career as engineers in modern fields of technology and industry, which are dynamically developing. After the BSc course students can take the MSc course in the same specialization. Masters course: The duration of the study is 3 semesters (1.5 academic years) - 90 ECTS are split into 3 equally loaded semesters. The program of the second level of Photonics Engineering specialization is developed as a high-quality educational offer in the area of modern optics, photonics and optomechatronics. After graduation students will have mastered the diverse areas of photonics, especially: mathematical and numerical modeling, design of opto–mechanical systems, image processing and recognition, optical methods of testing, diffraction optics and microoptics. The profile of a graduate corresponds with the challenges of the 21st century. The specialist knowledge, delivered during this course, prepares the graduate for a career as engineers and researchers in modern fields of science, technology and industry, which are dynamically developing. After the MSc course students can take next study in the doctoral course “Optics in Science and Engineering”.

Name of department: Faculty of Mechatronics, Institute of Micromechanics and Photonics
Number of core optics/photonics students currently enrolled in a related program: 60
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: BSc in Mechatronics/*; Specialization: Photonics Engineering. 3.5 years (incl. 1.5 years of specialization studies). In Polish, 24 students per year. BSc in Mechatronics; Specialization: Photonics Engineering. 3.5 years (incl. 1.5 years of specialization studies). In English, 24 students per year; MSc in Mechatronics; Specialization: Photonics Engineering. 1.5 years, in Polish, 24 students per year; MSc in Mechatronics; Specialization: Photonics Engineering. 1.5 years, in English, 24 students per year. Doctor of Engineering. Photonics Engineering (3–5 students per year)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics
Academic and research specialties related to optics/photonics:
Optical analysis: diffraction and interference phenomena. Optical design and construction of opto-electronic devices. Optical metrology: active interferometry, digital holography, optical tomography, optical methods of testing in biomedical engineering, experimental mechanics, material engineering, MEMS/MOEMS/*; optical testing (optics, fiber optics, etc.). Optical and numerical methods of image processing: digital holography, imaging and data conversion for virtual reality and active TV.
Year program was founded: 2007
Contact: Adam Styk, Assistant Professor
Email: a.styk@mchtr.pw.edu.pl
Website: http://ift.mchtr.pw.edu.pl/en/
Mailing address: Institute of Micromechanics and Photonics, 8 Sw.A.Boboli St., Warsaw 02-525 Poland

Institute of Nanosciences and Nonotechnology (IFIMUP-IN)
Porto, Portugal
Name of department: Physics
Optics/photonics related programs/degrees offered: Certification: Lasers Physics Doctoral degree/programs available.
Contact: Dr João Pedro Araujo, Group Leader
Email: jearaujo@fc.up.pt
Website: http://www.fc.up.pt
Mailing address: Institute de Fisica dos Materais da Universidade do Porto, Rua do Campo Alegre 687, Porto 4169-007 Portugal

PORTUGAL

Optics and Photonics Education Directory 2020/2021 31
Undergraduate/Graduate Programs

University Politehnica of Bucharest
Bucharest, Romania

Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 100
Number of students in optics/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 27
Optics/photonics related programs/degrees offered: Bachelor: Physical Engineering - 4 years; Master's: MSc, 2 years; PhD, 3 years
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics

Academic and research specialties related to optics/photonics:
Engineering and Applications of Lasers and Particle Accelerators (IALA) Master Program

Admission deadlines: Admission every year, in July and September
Year program was founded: 2005
Contact: Emil Smeu, Associate Professor
Email: emil.smeu@physics.pub.ro
Website: http://www.physics.pub.ro
Mailing address: University Politehnica of Bucharest, Physics Dept., Splaiul Independentei 313, Bucharest 60042 Romania

Institute of Atmospheric Optics
Tomsk, Russian Federation

Name of department: Siberian Branch of RAS
Number of core optics/photonics students currently enrolled in a related program: 75
Optics/photonics related programs/degrees offered: Doctoral: Optics, Radio Physics, Ecology, Atmosphere Physics & Hydro Orb, Geoeconomy
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Admission deadlines: September 1
Year program was founded: 1993
Contact: Prof. Oleg A. Romanovskii, Deputy Director
Email: roa@iao.ru
Website: http://www.iao.ru/en/
Mailing address: Institute of Atmospheric Optics SB RAS, 1 Akademichesky Ave., Tomsk 634021 Russian Federation

ITMO University
Saint Petersburg, Russian Federation

Name of department: Photonics School
Number of core optics/photonics students currently enrolled in a related program: 1515
Number of students in optics/photonics related course work: 1515
Number of optics/photonics related courses offered in this program: 35
Optics/photonics related programs/degrees offered: Bachelor: Optoelectronic devices and systems; Applied and Theoretical Physics; Laser photonics and optoelectronics; Bioengineering; Photonics and optoinformatics; Applied optics. Masters: Bioeconomics and resource management; Semiconductor Physics; LED technology and optoelectronics: Light guide photonics and programmable electronics; Radio frequency systems and devices; Nanophotonics and metamaterials; Photonics materials; Laser technology; Bioengineering and biotechnological systems; Physics and technology of nanostructures; Quantum communications and femto technologies; Quantum and Hybrid Materials; Applied Optics; Optical-digital systems. Doctoral: Instruments and methods of experimental physics; Theoretical physics; Radiophysics; Optics; Condensed matter physics; Physics of semiconductors; Thermophysics and theoretical heat engineering; Laser physics; Antennas, microwave devices and their technologies; Quantum Electronics; Instruments and methods of measurement; Navigation devices; Optical and optoelectronic devices and complexes; Instruments and methods for monitoring the environment, substances, materials and products; Instrumentation technology.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Admission deadlines: submission of applicants up to August 20 (beginning of studies: Sept. 1)
Email: nikiforov@mail.ifmo.ru
Website: https://en.itmo.ru/
Mailing address: 49 Kronverksky Pr., Saint Petersburg 197101 Russian Federation

Kazan National Research Technical University
Kazan, Russian Federation

Name of department: Radiophotonics and Microwave Technologies
Number of core optics/photonics students currently enrolled in a related program: 75
Number of students in optics/photonics related course work: 200
Optics/photonics related programs/degrees offered: Certification: Microwave Photonics, Advanced Quantum Optics. Bachelor: Full-time education; programs duration - 4 years; Opportunities to continue education after graduation in master programs. Masters: Full-time education; programs duration - 2 years; opportunities to continue PhD education after graduation. Doctoral: Optical and optical & electronic devices and complexes; Means and methods for nature, matter; materials and devices monitoring; Telecommunication fiber optic nets. Full-time/ part-time education; programs duration - 3/4 years.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Optical System Design; Diffractive optics; Automated Control and Stabilization of Optical Systems; Optical Systems for Lasers; Laser Rangefinders. Symmetrical Double-Frequency Reflectometry; Complexes for telecommunication nets monitoring; Metrological Systems With Fiber Bragg Gratings; Laser and Fiber Spectrometers for measurement of aerosols and nano-scale particles; Systems for Industrial and Environmental Inspection; Microwave Photonic Systems for Instant Frequency Measuring.

Admission deadlines: www.kai.ru
Year program was founded: 2014
Contact: Prof. Oleg G. Morozov, Department Head
Email: OGMorozov@kai.ru
Website: http://www.kai.ru
Mailing address: KNRTU-KAI, R&D Institute of Applied Electrodynamics, Photonics & Living Systems, PO box 72, Kazan Tatarstan 420107 Russian Federation

M.V. Lomonosov Moscow State University
Moscow, Russian Federation

Name of department: Faculty of Physics
Number of core optics/photonics students currently enrolled in a related program: 400
Number of students in optics/photonics related course work: 420
Optics/photonics related programs/degrees offered: Bachelor and masters: Optics Laser Physics, Quantum Electronics. Doctoral: Optics, Laser Physics, Quantum Electronics

Academic and research specialties related to optics/photonics: optical information processing; physics of electro- and acousto-optics; quantum communications and quantum calculations; quantum oscillating systems; wave guiding structures; physics of superintense laser fields and their applications; interaction of laser radiation with molecular gases; laser diagnostics in biology and medicine; laser opto-acoustics; lasers and nonlinear optics; modern computer technologies in detection, data acquisition, data processing, and control systems; modern problems of adaptive optics; nonlinear laser spectroscopy; nonlinear polarization optics; nonlinear waves and nonlinear optics; optical data processing; optics of conducting polymers and nanomaterials.

Contact: Natalya N. Nikiforova, Head of the International Office
Email: info@physics.msu.ru
Website: http://www.phys.msu.ru
Mailing address: M.V. Lomonosov Moscow State Univ., Faculty of Physics, Moscow 119992 Russian Federation
**SAUDI ARABIA**

King Abdullah University of Science & Technology (KAUST)
Thuwal, Saudi Arabia

The photonics program in KAUST provides quality education and training on basic and applied optical sciences aiming at increasing students’ understanding and utilization of photonics knowledge in fundamental research and engineering.

**Name of department:** Electrical Engineering
**Number of core optics/photonics students currently enrolled in a related program:** 25

**Number of students in optics/photonics related course work:** 40

**Number of optics/photonics related courses offered in this program:** 11

**Optics/photonics related programs/degrees offered:** MS in Electrical Engineering. PhD in Electrical Engineering

**Type/Description of disciplines/program tracks offered:** Electrical engineering; Optics; Photonics

**Academic and research specialties related to optics/photonics:** optics, photonics, optoelectronics, and computational electromagnetics.

**Admission deadlines:** January 15 for Fall admission and June 15 for Spring admission

**Year program was founded:** 2009

**Contact:** Prof. Boon S. Ooi, Professor of Electrical Engineering
**Email:** boon.ooi@kaust.edu.sa
**Website:** http://ee.kaust.edu.sa/

**Mailing address:** King Abdullah Univ. of Science & Technology, Electrical Engineering Dept., Thuwal 23955-6900 Saudi Arabia

**SPAIN**

Consejo Superior de Investigaciones Científicas
Madrid, Spain

Academic program at the associated universities (with various Masters/PhD programs in Visual Sciences, Photonics, femtochemistry, etc.), 2.- Onsite excellent research facilities. 3.- Active program of seminars and colloquia. 4.- Optical Society of America Student Chapter Program (www.iosa.csic.es). 5.- Excellent multidisciplinary research on campus (CSIC)

**Name of department:** Instituto de Optica
**Number of core optics/photonics students currently enrolled in a related program:** 20

**Number of students in optics/photonics related course work:** 10

**Number of optics/photonics related courses offered in this program:** 7

**Optics/photonics related programs/degrees offered:** Masters Program in Visual Sciences (the Institute of Optics, CSIC, is the node of this interdisciplinary, interuniversity program, coordinated by the University of Valladolid). Various members of the institute also participate in other Masters Programs: Master in Photonics (Universidad Autonoma de Madrid); QUIMILASER (University of Castilla la Mancha), Master in Metrology (Universidad Politecnica de Madrid), Master in Optical Technologies (Universidad Complutense de Madrid), etc. PhD Program in Visual Sciences (the Institute of Optics, CSIC, is the node of this interdisciplinary, interuniversity program, coordinated by the University of Valladolid). Various members of the institute also participate in other PhD Programs: Master in Photonics (Universidad Autonoma de Madrid); QUIMILASER (University of Castilla la Mancha) etc. PhD students conduct their PhD research at the facilities of the Insituto de Optica, under the supervision of its staff

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Photonics; Fiber optics

**Contact:** Joaquin Campos, Director
**Email:** direccion.io@csic.es
**Website:** http://www.io.csic.es

**Mailing address:** Instituto de Optica “Daza de Valdes”, Consejo Superior de Investigaciones Científicas, Serrano 121, Madrid 28006 Spain

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**Povolzhskiy State Univ. of Telecommunications and Informatics**
Samara, Russian Federation

**Name of department:** Faculty of Telecommunications and Radiotechnology

**Number of core optics/photonics students currently enrolled in a related program:** 150

**Number of students in optics/photonics related course work:** 2380

**Number of optics/photonics related courses offered in this program:** 8


**Type/Description of disciplines/program tracks offered:** Optical engineering; Electrical engineering

**Admission deadlines:** July 2016

**Year program was founded:** 1985

**Contact:** Igor V. Grigorov, Professor
**Email:** igor_grigorov@mail.ru
**Website:** http://www.psuti.ru

**Mailing address:** Lev Tolstoy str. 23, Samara 443010 Russian Federation

**Saratov State University**
Saratov, Russian Federation

Saratov State University has been training specialists in optics since 1946. In 2020/2021 academic year, five optics-related BS and MS programs will be offered at Physics Department: 1) BS program Optics and Laser Physics, 2) BS program Physics of Living Systems, 3) BS program Medical Photonics, 4) MS program Biophotonics, 5) MS program Physics of Optical and Laser Phenomena. BS program students are educated in the fundamental fields of mathematics, physics, biology, chemistry, computers and electronics then they attend the courses on specialization disciplines and gain practical experience in laboratories of Physics Department. Students have the opportunity to work in research labs of Research-Educational Institute of Optics and Biophotonics and International Research-Educational Center of Optical Technologies for Industry and Medicine “Photonics” of Saratov State University when preparing their annual projects/diploma projects. After graduation, students can continue their education with postgraduate (Candidate of Science) programs. New educational technologies aim at improving the quality of knowledge and skills of BS, MS, and postgraduate programs students in such key areas of physics and interdisciplinary sciences as physics of optical phenomena, biomedical photonics and biophysics and training specialists in the areas of laser and optical biomedical technologies, nanobiophotonics, optical biosensing, optical information and telecommunication systems, photonict crystal devices, and others.

**Name of department:** Department of Physics

**Number of core optics/photonics students currently enrolled in a related program:** 150

**Number of students in optics/photonics related course work:** 200

**Number of optics/photonics related courses offered in this program:** 60

**Optics/photonics related programs/degrees offered:** Bachelors: four-year BS programs: 03.03.02 Physics - Optics and Laser Physics; 03.03.02 Physics - Physics of Living Systems; 12.03.04 Biotechnology Systems and Technologies - Medical Photonics. Masters: Two-year MS programs: 03.04.02 Physics - Biophotonics; 03.04.02 Physics - Physics of Optical and Laser Phenomena. Doctoral: Four-year Candidate of Science programs: 03.06.01 Physics and Astronomy - Optics; 03.06.01 Physics and Astronomy - Laser Physics; 03.06.01 Physics and Astronomy - Biophysics.

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering

**Academic and research specialties related to optics/photonics:** Optics and spectroscopy, holography and optics of speckles, molecular spectroscopy, nonlinear dynamics and chaos in laser systems, tissue optics, fundamentals of photobiology, physics of optical and laser measurements, laser and optical measurements in medicine.

**Contact:** Prof. Valery V. Tuchin, Head of Department of Optics and Biophotonics
**Email:** tuchinvv@mail.ru
**Website:** http://www.sgu.ru/en

**Mailing address:** Saratov State University, 83 Astrakhanskaya str., Saratov 410012 Russian Federation
ICFO - The Institute of Photonic Sciences
Castelldelfels (Barcelona), Spain

ICFO participates in the Master of Multidisciplinary Research in Experimental Sciences, offered by UPF and BIST. This new program offers highly flexible and personalized hands-on research training in a multidisciplinary research environment. ICFO also participates in the Master in Photonics offered by 4 Universities located in the Barcelona area. The master is comprehensive in the basics and applications of optical sciences with special focus to applications in life sciences, nanotechnologies, and remote sensing. ICFO offers a focused PhD program that targets the most advanced topics in optical sciences and technologies.

Research lines include, but are not limited to: - Biophotonics and photo-medicine - Graphene opto-electronics - Nanophotonics and Nanotechnology - Nonlinear Optics and Frequency conversion - Quantum Optics and Quantum Information - Atto-science and Ultrafast Laser Science - Optical Sensing and Optoelectronics - Green Photonics and Photovoltaics - Nanoscopy and Super-resolution Imaging.

Students in this program have access to cutting-edge experimental infrastructures and to specialized courses and seminars given by ICFO faculty. Entrepreneurship and commercialization techniques are also an integral part of the curricula. ICFO, in collaboration with other European institutions, is offering an Erasmus Mundus Master EUROPHOTONICS.

Name of department: ICFO - The Institute of Photonic Sciences

Number of core optics/photonics students currently enrolled in a related program: 150

Number of students in optics/photonics related course work: 150

Number of optics/photonics related courses offered in this program: 4

Optics/photonics related programs/degrees offered: MSc of Multidisciplinary Research in Experimental Sciences; MSc in Photonics; EUROPHTONICS Erasmus Mundus Master Course; PhD in Photonics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Optical engineering, optics, and photonics, experimental and theoretical physics programs are available in disciplines such as: Biophotonics, Biophysics and Biomedical Optics; Nanophotonics; Quantum Optics and Quantum Information; Optical Sensing, Optoelectronics and Photovoltaics; Nonlinear Optics and Ultrafast Physics. For further information, please visit: www.icfo.eu

Year program was founded: 2007

Contact: Dr. Rob Sewell, ICFO Coordinator of Academic Programs
Email: robert.sewell@icfo.eu
Website: http://www.icfo.eu
Mailing address: ICFO-The Institute of Photonic Sciences, Mediterranean Technology Park, Av. Carl Friedrich Gauss, n.3, Castelldelfels (Barcelona) 08860 Spain

Universidad de Murcia
Murcia, Spain

General training physics (five years) with a concentration in optics the last two years. During the optics concentration, the following courses, among others, are offered: photonics, image processing, visual optics, biomedical optics, advance optical instrumentation, statistical optics.

Master degree in Physics of Vision, with emphasis on the optical aspects of Vision science. PhD programs are mainly related to the research activities of the Optics Lab in visual optics and adaptive optics.

Name of department: Optics Lab
Number of core optics/photonics students currently enrolled in a related program: 20

Number of students in optics/photonics related course work: 60

Number of optics/photonics related courses offered in this program: 20

Optics/photonics related programs/degrees offered: BS Physics, BS Optometry; MS in Physics; PhD in Optics, PhD in Vision Science

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Fiber optics; Vision Science; Optometry

Academic and research specialties related to optics/photonics: visual optics, microscopy, adaptive optics, biomedical optics, optical instrumentation, image processing, near-field optics, lasers, ultrafast optics

Admission deadlines: July-September
Year program was founded: 1998
Contact: Pablo Artal, Prof.
Email: pablo@um.es
Website: http://lo.um.es
Mailing address: Universidad de Murcia, Laboratorio de Optica, Centro de Investigacion en Optica y Nanofisica (CIOyN), Campus de Espinardo, Murcia 30100 Spain

Universidad de Sevilla - ETSI
Seville, Spain

The main objective of the courses “Applied Optics (AO)” and “Holography and 3D Visualization (H3D)” is to enhance student knowledge of applied optics and photonics, and to familiarize them with the latest applications in 3D visualization technologies of images and data. Course instruction is focused on current applications with a minimum treatment of “basic theory” and with a practical orientation toward the available technologies of these fields. The course curriculum is characterized by a “modular design” and includes applications of every engineering sector taught at our center. This curriculum is designed to allow for individualization according to specific interests, not only to tailor instruction for a particular student’s degree, but also to be able to incorporate other topics about similar technologies into the program.

Common Keywords: applied optics, 3D visualization, physical holography, digital holography and Fourier optics, photonics, optical technologies of measurement and analysis, radiometry, photometry, digital cameras of video and photography, light sources and lasers, solid state lighting (SSL), 2D and 3D scanning and projection systems, biomedical optics, neurophotonics, optical instrumentation for neurosurgery, phetal surgery and ophtalmology, non-invasive and image guided surgery, oncological and vascular fluorescence, thermal and hyperspectral imaging, aerial and satellite imaging, nonimaging optics and solar energy.

Name of department: Applied Physics III
Number of core optics/photonics students currently enrolled in a related program: 30

Number of students in optics/photonics related course work: 30

Number of optics/photonics related courses offered in this program: 2

Optics/photonics related programs/degrees offered: Bachelors: Course “Applied Optics” offered in Aerospace Engineering (GIA), Industrial Technology Engineering (GITT), Telecommunication Technology Engineering (GITT), Chemical Engineering and in Industrial Organization Engineering (GIOI), within the International Campus of Excellence ANDALUCIA-TECH. http://www.etsi.us.es/

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics; Biomedical optics

Admission deadlines: Open every academic year. Visit: http://www.etsi.us.es
Year program was founded: 2010
Contact: Prof. Dr. Emilio Gomez-Gonzalez
Email: egomez@us.es
Website: http://www.esi2.us.es/DFA/OAyH3D
Mailing address: Engineering School (ETS1), Dpt. of Applied Physics III, Camino de los Descubrimientos s/n, Seville 41092 Spain

Linköping University
Linköping, Sweden

Material optics: Understanding of optical properties and microstructure of bulk materials and thin layers as well as their surfaces and interfaces. Optics in biology: Application of our methodology in surface biology and biosensors. Dynamic processes: Understanding of the dynamics of processes on surfaces and in thin films. Sensing layers: To investigate thin layers for potential use as sensing layers with optical readout. Materials studied include porous layers, polymer layers, biological layers as well as new semiconductor materials. Optical measurement systems: To develop experimental tools, methodology and measurement systems for research and industrial applications.

Name of department: Physics, Chemistry and Biology
Number of core optics/photonics students currently enrolled in a related program: 3

SWEDEN
Ecole Polytechnique Fédérale de Lausanne (EPFL)
Lausanne, Switzerland

The doctoral program in Photonics (EDPO) is one of the 21 doctoral programs at EPFL. EDPO offers truly multidisciplinary and internationally recognized research and education program. We have world-leading research labs in photonics, which are addressing important challenges of our society in health, energy, information technology, security, safety and environment. EPFL offers outstanding resources and state-of-the-art research facilities including the Center for Micro- and Nanotechnology, the Bioimaging and Optics Platform, and the Interdisciplinary Center for Electron Microscopy. The program includes courses (12 credits minimum) on the science of photonics and optics as well as a broad choice of engineering-related topics on the application of photonics. On the campus, there are continuous seminars and international events to network with pioneering scientists and companies. At EPFL there is a strong sense of community among photonics researchers and there are student platforms and organizations to foster for career development. Thesis directors are expert in their field of research and guide the PhD students to achieve research excellence and help them become future leaders in academia or industry. The Minor in Photonics (30 credits) complements the two-year Master programs (120 credits) offered at EPFL, providing additional skills in the field of optics, optical engineering and related technologies. This minor aims to provide an understanding of several topics in photonics. The main objective is the ability to work on problems involving photonics. At completion of the minor program, students will have learned courses in optics, optical engineering and photonics. Students will acquire skills on these subjects to a level such that students are able to explain the key photonics principles, able to use photonics tools to solve practical problems, able to explain all the technical terms and their significances, and able to apply key concepts and principles qualitatively in simple and more complicated engineering applications. Students are able to appreciate the impact of photonics to physics and engineering applications in a global and societal context. Students will be confident in using photonics principles to open-end situations. The program includes courses (20 credits minimum, all optional) of basis in optical sciences as well as a broad choice of engineering-related courses with emphasis on applications in optical engineering. A semester project (10 credits, mandatory) related to optical technology is included in the Minor and provide the students with a research oriented project in a laboratory.

Name of department: MicroEngineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 320
Number of optics/photonics related courses offered in this program: 33
Type/Description of disciplines/program tracks offered: Masters: Minor in Photonics; Doctoral Program in Photonics (EDPO)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Biomedical optics; Fiber optics
Admission deadlines: January 15, April 15, September 15

Year program was founded: 2007
Contact: Christophe Moser, Professor
Email: christophe.moser@epfl.ch
Website: epfl.ch
Mailing address: EPFL, STI/IMT/LAPD, Station 17, Lausanne Vaud 1015 Switzerland

OST - Eastern Switzerland University of Applied Sciences
Buchs, Switzerland

Name of department: Engineering - NTB
Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 30
Type/Description of disciplines/program tracks offered: Bachelor of Science in Systems-Engineering with Specialization in Photonics (180 ECTS): Systems engineering with Specialization in Photonics combines the classical engineering disciplines of mechanics, computer science, physics and electronics with modern photographic technologies of today and tomorrow. This offers excellent career opportunities in a variety of industries, including optics and optical systems, medical technology and mechanical engineering. Masters: Master of Science in Engineering (M.Sc.) with Specialization in Photonics (90 ECTS): The program focuses on a wide range of industrial projects for their specialization in Optical metrology and machine vision (incl. Machine Learning), Fiber sensors and Integrated optics, Laser based manufacturing (Selective Laser Etching (SLE) and laser polishing) and Optical thin films. https://www.mseengineering.ch

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics (Optical metrology and image processing: Imaging systems: microscopy, vision-based systems for quality control, biomedical imaging / Spectroscopy for the highly sensitive detection of chemical compounds for environmental and process monitoring and colorimetry/Interferometry for dimensional metrology or optical coherence tomography), Photonics (Design and modelling of optical systems: Simulation: ray tracing, wave optics simulation, thin-film design, CAD, and FEM simulation / Prototyping, testing, measuring, validating and optimizing of photonic -components, modules, or systems / Fibre optics, integrated optics, optical microsystems)

Year program was founded: 2016
Contact: Markus Michler, Prof. Dr.
Email: markus.michler@ost.ch
Website: https://www.ntb.ch/studium/ingenieurstudium/photonik
Mailing address: NTB Buchs, Werdenbergstrasse 4, Buchs St. Gallen 9471 Switzerland

University of Applied Sciences of the Grisons
Chur, Switzerland

Name of department: Applied Future Technologies
Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 20
Type/Description of disciplines/program tracks offered: Bachelor of Sciences in Photonics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics Optical Systems; Image Processing

Academic and research specialties related to optics/photonics: Prototyping

Accreditation Program: EU-ACR Label (European -Accredited Engineering Bachelor Degree Program)
Accreditation Organization: ASIN
Admission deadlines: Application deadline is end of April
Year program was founded: 2016
Contact: Tobias Leutenegger, Director of Studies
Email: tobias.leutenegger@fhgr.ch
Website: https://www.fhgr.ch/en/
Mailing address: Pulvermuesliestrasse 57, Chur Grisons 7000 Switzerland
TWA

National Taipei University of Technology
Taipei, Taiwan

Name of department: Electro-Optical Engineering
Number of core optics/photronics students currently enrolled in a related program: 335
Number of students in optics/photronics related course work: 42
Optics/photronics related programs/degrees offered: Bachelor's, Department of Electro-Optical Engineering, Department of Electrical Engineering, Department of Chemical Engineering and Biotechnology, Department of Materials and the Mineral Resources Engineering, Department of Molecular Science and Engineering; Master's, Graduate Institute of Electro-Optical Engineering, Graduate Institute of Electrical Engineering, Graduate Institute of Mechanical Engineering, Graduate Institute of Manufacturing Technology, Institute of Chemical Engineering, Institute of Materials and the Mineral Resources Engineering, Institute of Organic and Polymeric Materials; Doctoral: Institute of Electro-Optical Engineering / Ph.D. Program, Institute of Electrical Engineering / Ph.D. Program, Institute of Mechanical and Electrical Engineering / Ph.D. Program, Institute of Materials and the Mineral Resources Engineering / Ph.D. Program, Institute of Organic and Polymeric Materials / Ph.D. Program
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Engineering; Fiber optics

National Taiwan University
Taipei, Taiwan

Name of department: Physics
Number of core optics/photronics students currently enrolled in a related program: 50
Number of students in optics/photronics related course work: 200
Optics/photronics related courses offered in this program: 15
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Fiber optics

Admission deadlines: https://oia.ntu.edu.tw/study-at-ntu/degree-student/20202admission
Contact: Shi-Wei Chu, Professor
Email: swchu@phys.ntu.edu.tw
Website: http://www.phys.ntu.edu.tw/
Mailing address: R422, Department of Physics, National Taiwan University, No.1, Sec. 4, Roosevelt Road, Taipei 10617 Taiwan

Turkey

Koç University
Istanbul, Turkey

Research in the optical sciences and technology is performed through collaboration between the related Science and Engineering Departments. Experimental research is performed in the areas of novel optical materials, active and passive optical devices, optoelectronic systems, DWDM, near-infrared tunable solid-state lasers, spectroscopy of materials, ultrafast, integrated photonics, lasers, magnonics, MOEMS, display image quality, micro-optical elements, and scanning systems. Fluorescence Correlation Spectroscopy (FCS) and FRET microscopy, photonic crystals, metamaterials, nanophotonics, biophotonics, microwave photonics, and plasma physics. Theoretical research is performed on the optical properties of semiconductor heterojunctions, quantum phase, quantum and nonlinear optics in BEC's, ultraslow and superluminal light propagation, cavity QED, quantum information, spintronics, optical communication, and advanced signal processing.
Name of department: Departments of Chemistry, Electrical and Electronics Engineering, & Physics
Number of students in optics/photronics related course work: 100
Number of optics/photronics related courses offered in this program: 10
Optics/photronics related programs/degrees offered: Bachelor's: BS in Chemistry, BS in Electrical and Electronics Engineering, BS in Physics. Masters: MS in Biomedical Science and Engineering, MS in Chemistry, MS in Computational Science and Engineering, MS in Electrical and Electronics Engineering, MS in Materials Science and Engineering, MS in Physics. Doctoral: PhD in Biomedical Science and Engineering, PhD in Chemistry, PhD in Computational Science and Engineering, PhD in Electrical and Electronics Engineering, PhD in Material Science and Engineering, PhD in Physics
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering
Academic and research specialties related to optics/photronics: Design, development, and characterization of novel light sources, optoelectronic materials, microphotonics devices, micro-opto-electro-mechanical systems (MOEMS), optical information processing systems; and the investigation of ultrafast and nonlinear optics, quantum optics, ultraslow and superluminal light, cavity QED, quantum information, spintronics, photonic crystals, nanophotonics, biophotonics, magnonics, metamaterials, microwave photonics, photonic architecture, plasma physics, optical communication and advanced signal processing.
Accreditation Organization: MUDEK (ENAAE)
Admission deadlines: June 1
Year program was founded: 1993
Contact: Ali Serpenguzel, Professor of Physics
Email: aserpenguzel@ku.edu.tr
Website: http://www.ku.edu.tr
Mailing address: Koc University, Rumelifeneri Yolu, Sariyer, Istanbul 34450 Turkey

Tunisia

Engineering School of Communication of Tunis (Sup’Com), Univ. of Carthage
Gazala, Tunisia

The program is designed to produce highly-qualified engineers, capable of designing, implementing and operating the services, the systems and the telecommunications networks including wireless and optical systems and equipment. The specialization will offer an up-to-date curriculum in lasers, optical fibers, and optical components, systems and networks.
Name of department: Electronics, Physics
Number of core optics/photons students currently enrolled in a related program: 30
Number of students in optics/photronics related course work: 200
Number of optics/photronics related courses offered in this program: 5
Optics/photons related programs/degrees offered: Master in Telecommunications (5 years) with research in photonics related topics. PhD in telecommunications with research in photonics related topics
Academic and research specialties related to optics/photons: optical communications, optical fibers, lightweight systems, optical networks, quantum information, photonic components
Contact: Mourad Zghal, Professor
Email: mourad.zghal@supcom.tn
Website: http://www.supcom.mincom.tn
Mailing address: 3.5 Km Rte De Raoued, Gazala Ariana 2080 Tunisia
UKRAINE

Chernivtsi National University, Institute of Physical, Technical and Computer Sciences
Chernivtsi, Ukraine

Name of department: Correlation Optics, Optics and Publishing Department

Number of core optics/photonics students currently enrolled in a related program: 250

Number of students in optics/photonics related course work: 250

Number of optics/photonics related courses offered in this program: 5


Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics (Photonics Devices); Biomedical optics; Fiber optics; Singular Optics; Correlation Optics; Holography

Academic and research specialties related to optics/photonics: Specializations: optoelectronic devices, biomedical optics, optics and communications, printing

Admission deadlines: Deadline - October 30, 2020

Year program was founded: 1994

Contact: Prof. Leonid V. Poperenko, Head of Chair of Optics

Email: plv@univ.kiev.ua

Website: http://optics.univ.kiev.ua

Mailing address: Taras Shevchenko National University of Kyiv, Faculty of Physics, Chair of Optics, 64 Volodymyrska Vul., Kyiv 01601 Ukraine

Livy Polytechnic National University
Lviv, Ukraine

Name of department: Photonics

Number of core optics/photonics students currently enrolled in a related program: 32

Number of students in optics/photonics related course work: 32

Number of optics/photonics related courses offered in this program: 18


Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Admission deadlines: The deadline for B.S. and M.S. programs is usually June 30, the deadline for Ph.D. program is usually July. Please contact us for details.

Year program was founded: 1994

Contact: Prof. Dr. Yaroslav V. Bobytskyi, Head of Photonics Dept.

Email: yaroslavv.bobytskyi@ipnu.ua

Website: http://www.lp.edu.ua

Mailing address: Liviv Polytechnic National Univ., Photonics Dept., 12 Stepana Bandery Str., Liviv 79013 Ukraine

Taras Shevchenko National University of Kyiv
Kyiv, Ukraine


Name of department: The Faculty of Physics, Chair of Optics

Number of core optics/photonics students currently enrolled in a related program: 150

Number of optics/photonics related courses offered in this program: 30


Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics

Academic and research specialties related to optics/photonics: 1. Laser and Optoelectronic Engineering 2. Solid State Optics

Admission deadlines: June 15

Year program was founded: 1939

Contact: Prof. Leonid V. Poperenko, Head of Chair of Optics

Email: plv@univ.kiev.ua

Website: http://optics.univ.kiev.ua

Mailing address: Taras Shevchenko National University of Kyiv, Faculty of Physics, Chair of Optics, 64 Volodymyrska Vul., Kyiv 01601 Ukraine

UNITED ARAB EMIRATES

Khalifa University of Science and Technology
Abu Dhabi, United Arab Emirates

Masdar Institute is an independent, not-for-profit, research driven, graduate institution. It is developed in cooperation with the Massachusetts Institute of Technology (MIT) in the USA to follow the standards for research and education similar to MIT. The institute is located in Abu Dhabi in Masdar City, a carbon neutral and a zero waste sustainable city to be powered solely by alternative energy. During the two-year Masters program, students are taking classes and pursuing research in their selected field. A thesis is submitted at the end of the program. While peers and faculty represent over 30 different nationalities, all instruction is conducted in English. The institute is currently working with local accreditation entities to get an interdisciplinary PhD program officially started.

Name of department: Microsystems Engineering Program

Number of core optics/photonics students currently enrolled in a related program: 8

Number of students in optics/photonics related course work: 10

Number of optics/photonics related courses offered in this program: 10

Optics/photonics related programs/degrees offered: Masters available. Application for the accreditation of the PhD program is pending.

Type/Description of disciplines/program tracks offered: Optical engineering, Electrical engineering; Technology; Optics; Photonics; Biomedical optics

Academic and research specialties related to optics/photonics: Integrated Optics; Nanophotonics

Year program was founded: 2009

Contact: Dr. Jaime Ribeiro Viegas, Associate Professor

Email: jviegas@masdar.ac.ae

Website: http://nanophotonics.labs.masdar.ac.ae/

Mailing address: Khalifa Univ. of Science & Technology, Masdar Institute, PO Box 54224, Abu Dhabi United Arab Emirates

UNITED KINGDOM

Aston University
Birmingham, United Kingdom

Name of department: Photonics Research Group, School of Engineering and Applied Science

Number of core optics/photonics students currently enrolled in a related program: 70

Optics/photonics related programs/degrees offered: Masters: MSc in Telecommunications Technology MRer in Photonic Networks. Doctoral: Contact individuals with appropriate research interests as listed on the web site

Academic and research specialties related to optics/photonics: Fibre Bragg Gratings; Optical Fibre Sensing; Optical Fibre Transmission; Optical Switching; Radio-on-Fibre Systems

Year program was founded: 1970

Contact: Ms. S.L.Cox, Postgraduate Administrator

Email: teltec@aston.ac.uk

Website: http://www.aston.ac.uk/ee

Mailing address: Aston University, Photonics Research Group, Aston Triangle, Birmingham B4 7ET United Kingdom
Cardiff University  
Cardiff, United Kingdom

Cardiff’s MSc in Biophotonics is the first programme in the UK offering innovative training at the interface between laser optics, cell biology and medicine. Whether you are an emerging researcher or plan a future in a biophotonics-related industry, we can provide the fundamental understanding and hands-on experience necessary for work in this rapidly developing field. This programme is jointly taught by expert scientists in the School of Physics and Astronomy and in the School of Biosciences using world-class research and teaching facilities. Much of the research in this field is inter-disciplinary in nature, drawing expertise from different areas across the life science, physical science and engineering disciplines. The course will cover a broad range of subject areas including advanced light microscopy, cell and tissue imaging, laser-based techniques, nanoparticles as optical bio-labels, biosensors, and medical applications. The programme will comprise introductory material in the autumn semester, giving both life and physical scientists the necessary tools for tackling the advanced modules in the spring semester covering the latest developments in this rapidly evolving area. Subject to satisfactory progress, students will be placed with an industrial collaborator or a university research group to undertake the project module of three months’ duration.

Name of department: School of Physics & Astronomy/School of Biosciences
Number of core optics/photronics students currently enrolled in a related program: 10
Number of optics/photons related courses offered in this program: 5
Optics/photons related programs/degrees offered: Masters: MSc Biophotonics (FT and PT options)
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics
Year program was founded: 2006
Contact: Prof. Wolfgang Langbein, Admissions Tutor
Email: mubiophotons@cardiff.ac.uk
Website: http://www3.imperial.ac.uk/
Mailing address: Department of Physics, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh EH14 4AS United Kingdom

Cranfield University  
Cranfield, United Kingdom

Name of department: Engineering Photonics
Number of core optics/photronics students currently enrolled in a related program: 12
Number of optics/photons related courses offered in this program: 1
Optics/photons related programs/degrees offered: Masters: MSc by research. A one year programme; MPhil by research. A two year programme. Doctoral: PhD. 3 year research programme
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Biomedical optics; Instrumentation

Academic and research specialties related to optics/photronics:
- Optical Instrumentation, Optical fibre sensors, short and long period fiber gratings fabrication and application. Planar flow measurement systems for use in windtunnels and turbomachinery. Many programmes are multidisciplinary involving collaboration with other Cranfield specialisms including, composite material processing, damage and health monitoring of structures, aerospace and flight test programmes and nanoscale organic materials combined with fibres for sensing and signal processing.

Admission deadlines: Applications accepted at any time
Year program was founded: 1989
Contact: Prof. Ralph R. Tatam, Head, Centre for Engineering Photonics
Email: rp.tatam@cranfield.ac.uk
Website: http://www.cranfield.ac.uk/
Mailing address: Cranfield University, Engineering Photonics, Cranfield Bedford MK43 0AL United Kingdom

Heriot-Watt University  
Edinburgh, United Kingdom

The department runs a Postgraduate Masters (MSc) program in Photonics and Optoelectronic devices that is joint with the University of St. Andrews. Students spend time at the two Universities, benefiting from the combined expertise and diversity of staff, teaching and research facilities made available to them. This one-year course includes a three-month period on a research project at an industrial company, usually in the UK.

Name of department: Department of Physics
Number of core optics/photronics students currently enrolled in a related program: 250
Optics/photons related programs/degrees offered: Bachelor: We offer a number of Undergraduate programs in Physics including BSc (Honours) in Physics, BSc (Honours) in Engineering Physics. Masters: We offer integrated Masters programs (MPhys) in Physics, and also in Engineering Physics. Doctoral: Doctoral research programs are available for both PhD and EngD (Engineering Doctorate) study. Photonics PhD research is available in the Institute of Photonics and Quantum Sciences, see website for details: http://www.ipaqs.hw.ac.uk. The Engineering Doctorate in Applied Photonics is a 4 year postgraduate degree, with an emphasis on research in a business/industrial context, with the aim of delivering senior research managers of the future. It is a combination of taught coursework and industrial research projects. See the website for details: http://www.engd.hw.ac.uk/

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photronics:

Admission deadlines: All our Undergraduate and MSc programmes start in September. Applications are normally requested by early summer, but may be considered closer to the start date.
Year program was founded: 1980
Contact: Dr William MacPherson, Deputy Academic Head of Physics
Email: w.m.macpherson@hw.ac.uk
Website: http://www.phy.hw.ac.uk
Mailing address: Department of Physics, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh EH14 4AS United Kingdom

Imperial College London  
London, United Kingdom

The MSc Programme in Optics and Photonics (https://www.imperial.ac.uk/study/pg/physics/optics-photons/) is a 12-month course that includes 180 hours of lectures, 160 hours of laboratory work and a 4-month project. It covers all aspects of opto-electronics, laser physics and optical engineering required for a career in this field. The MRes in Photonics is available for students beginning an MSc + PhD programme. Please see http://www3.imperial.ac.uk/physics for details of our other courses.

Name of department: Physics (Blackett Laboratory)
Number of core optics/photronics students currently enrolled in a related program: 25
Number of students in optics/photons related course work: 50
Number of optics/photons related courses offered in this program: 7
Optics/photons related programs/degrees offered: Bachelor: BSc/MSci Physics. Masters: MSc in Photonics. MSc in Photonics with Nanophotonics. MSc in Physics with Quantum Dynamics. MRes in Electronic Engineering. Doctoral: PhD in Physics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photronics:
- All aspects of optics and photonics are covered by our extensive research activities. See www.imperial.ac.uk/physics for details of current research topics.

Admission deadlines: No fixed deadline, best to apply by end of June.
Year program was founded: 1917
Contact: Dr. Andrew Williamson, PG Development Officer
Email: andrew.williamson@imperial.ac.uk
Website: https://www.imperial.ac.uk/physics/students/admissions/postgraduate-admissions/master-level-programmes/
Mailing address: Blackett Laboratory, Imperial College London, London SW7 2AZ United Kingdom

University College London  
Torrington Place, United Kingdom

We offer a four-year program in Connected Electronic and Photonic Systems which combines a one-year Master of Research (MRes) followed by a three-year doctorate (PhD). The program is run jointly between University College London (UCL) and University of Cambridge, with industry collaborations. During the MRes year students will study taught modules and undertake mini research projects at both institutions. This intensive program is designed to provide students with a solid grounding in photonics, the applications, systems and business drivers and to
University of Kent
Canterbury, United Kingdom
Training in Methods and Devices for Non-invasive High Resolution Optical Measurements and Imaging. Offers research training in optical scanning, optical coherence tomography, interferometry, sensing, optical sources, adaptive optics, optical devices for non-invasive imaging of tissue/ optics of the tissue. Applicants must have a good background in theoretical/ experimental optics and a degree in Physics, Medical Physics or Electronic Engineering.
Name of department: Applied Optics Group, School of Physical Sciences
Number of core optics/photonics students currently enrolled in a related program: 5
Number of students in optics/photonics related course work: 25
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: Bachelors: BSc Physics, BSc Physics with Astrophysics, BSc Astronomy, Space Science & Astrophysics, BSc Physics with a Foundation Year. Masters: MSc Physics (includes Optics), MSc EuroMasters in Physics, MSc Biomedical Imaging, MSc Chemistry, MPhil Physics (includes Optics), MPhil Chemistry. Doctoral: PhD Physics (includes Optics), PhD Chemistry.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photonics: Optical Coherence Tomography (OCT), Confocal Microscopy (CM), Adaptive Optics for the eye (AO), components for OCT, CM and AO, endoscopy, fiber optic sensing, secure optical communications.
Admission deadlines: The University will consider applications for research degrees throughout the year. To apply for postgraduate study at Kent, go to the following website to complete the online application form: http://www.kent.ac.uk/studying/postgrad/apply/index.html
Year program was founded: 2006
Contact: Adrian Podoleanu, Professor of Biomedical Optics
Email: ap11@kent.ac.uk
Website: https://research.kent.ac.uk/appliedoptics/
Mailing address: School of Physical Sciences, University of Kent, Ingram Building, Room 301, Canterbury Kent CT2 7NH United Kingdom

University of Southampton
Southampton, United Kingdom
Name of department: Optoelectronics Research Centre
Number of core optics/photonics students currently enrolled in a related program: 120
Number of students in optics/photonics related course work: 120
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: Masters: MSc Photonic Technologies, MSc Optical Fibre Technologies. Doctoral: PhD in Photonics
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Year program was founded: 1990
Contact: Pier Sazio, Dr.
Email: fpse-phdapply@soton.ac.uk
Website: http://www.orc.soton.ac.uk
Mailing address: University of Southampton, Optoelectronics Research Centre, Building 46, Highfield Campus, Southampton Hampshire SO17 1BJ United Kingdom

University of St. Andrews
Scotland, United Kingdom
First degree (MPhys) in Physics: four/five-year course contains substantial project, often working closely with a research group. MSc in Photonics and Optoelectronics Devices: likely last intake September 2020, well-established 12-month course with academic input from two highly regarded Universities, including a summer project placement usually in industry. PhD in Physics: three years working in one of the School’s successful research teams towards the degree of PhD, projects currently running in ultrashort pulse lasers and devices, semiconductor
spectrum, solid-state lasers, optical parametric devices, optical instrumentation, nanstructured materials, and terahertz technology. EngD programme is at same level as PhD, but with most of the time spent in industry.

Name of department: School of Physics and Astronomy
Number of core optics/photonics students currently enrolled in a related program: 60
Number of students in optics/photonics related course work: 300
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: BSc programmes in physics (3 or 4 years long) can contain significant amounts of photonics. Masters: MPhys First degree: Physics. Doctoral: PhD and EngD programmes in photonics research are available.
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics
Academic and research specialties related to optics/photonics: Biophotonics, ultrashort-pulse-devices, optical parametric oscillators, miniature solid-state lasers, optical time-resolved studies of low-dimensional semiconductors, optical-instrumentation, photonic microstructures, Fabrication of novel (III-V and organic) semiconductor light sources, quantum-optics, coherent effects in atoms, optical-trapping and guiding. Other areas include Terahertz-technologies, astronomy, solid-state, theoretical-physics. These specialties are reflected in the range of special options in undergraduate degree programme, and in PhD student places.
Accreditation Program: First degrees are accredited by the UK and Ireland Institute of Physics
Accreditation Organization: UK and Ireland Institute of Physics
Admission deadlines: As soon as possible. January deadline for most first degree courses. Spring deadline for PhD courses, summer deadline for consideration for MSc and EngD places. Details from the School.
Contact: Dr Bruce Sinclair, Reader
Email: b.d.sinclair@st-andrews.ac.uk
Website: http://www.eee.strath.ac.uk
Mailing address: School of Physics and Astronomy, University of St Andrews, St Andrews Fife, , Scotland KY16 9SS United Kingdom

University of Strathclyde
Glasgow, United Kingdom
One of the research themes in the Department of Electronic and Electrical Engineering is in Photonic Sensors, Components and Systems. This has been a mainstream activity for 15 years and has grown to include topics such as optoelectronic sensors and systems, optical communication systems and optical and photonic devices. In the sensors area, projects are conducted in optical microsensors, biomedical optical systems environmental and gas sensors, and optoelectronic and fibre optic sensors for structural integrity monitoring.
Name of department: Electronic and Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 80
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: BEng.
Masters: Meng, MSc, MPhil. Doctoral: PhD
Academic and research specialties related to optics/photonics: Optoelectronic sensors and systems, optical and photonic devices in MEMS, fibre and integrated optics, and optical communication network studies.
Admission deadlines: Open deadline for postgraduate research and for masters courses. To 1 October of year of entry for undergraduate courses.
Year program was founded: 1985
Contact: Prof. Brian Culshaw
Email: b.culshaw@eee.strath.ac.uk
Website: http://www.eee.strath.ac.uk
Mailing address: Univ of Strathclyde, Dept. of E&E, 204 George St, Glasgow G1 1XW United Kingdom

Alabama Agricultural and Mechanical University
Normal, Alabama USA
MS and PhD degrees are offered in physics with specializations in optics/lasers, materials science and space science. 12 credit hours (minimum) in general courses are required for MS, 12 hours of specialized courses in area of specialization, and six hours for thesis. Students can obtain MS degree with comprehensive examination without thesis with 30 credit hours of courses. 60 credit hours for PhD are required with 45 hours in area of specialization and 15 hours in general area. In addition student must pass a departmental qualifying examination, candidacy examination, must do research on an approved topic, must earn 12 semester credits.
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 15
Number of students in optics/photonics related course work: 15
Number of optics/photonics related courses offered in this program: 23
Optics/photonics related programs/degrees offered: BS in Physics, Applied Physics and Space Science; MS in Optics/lasers, MS in Materials Science. MS in Science; PhD in Optics/Lasers; PhD in Materials Science
Type/Description of disciplines/program tracks offered: Physics
Admission deadlines: Fall, June 1; Spring, October 1; Summer, March 1
Year program was founded: 1981
Contact: Prof. Mohan Aggarwal, Chairman
Email: mohan.aggarwal@aamu.edu
Website: http://www.aamu.edu/physics
Mailing address: Alabama A&M Univ., Dept. of Physics, P.O. Box 428, Normal AL 35762 USA

University of Alabama at Birmingham
Birmingham, Alabama USA
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 10
Optics/photonics related programs/degrees offered: Masters and Doctoral programs offered
Type/Description of disciplines/program tracks offered: Physics; Optics
Contact: Professor Ilias Perakis, Physics Department Chair
Email: iperakis@uab.edu
Website: http://www.uab.edu/cas/physics
Mailing address: CH 310, Department of Physics, 1720 2nd Avenue South, Birmingham AL 35294 USA
University of Alabama in Huntsville

Huntsville, Alabama USA

This unique program is highly multi-disciplinary and is followed by a wide variety of advanced course work and research in both fundamental and applied subjects. This diversity is reflected by the OSE faculty which draws on the expertise of optical scientists and engineers from the Departments of Physics, Electrical Engineering, Mechanical Engineering

Name of department: Physics, Electrical and Computer Engineering, Center for Applied Optics

Number of core optics/photonics students currently enrolled in a related program: 80

Number of students in optics/photonics related course work: 100

Number of optics/photonics related courses offered in this program: 30

Optics/photonics related programs/degrees offered: BS or BSE with a concentration in Optics and Photonics; MS/MSE with a concentration in Optics and Photonics; PhD in Optical Science and Engineering; PhD in Electrical Engineering

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics

Academic and research specialties related to optics/photonics: Plasmonics and metamaterials; astrophysical optics; diffractive/ micro-optics; fiber optics/fiber optic sensors; holography; lasers; laser-induced plasma; image processing; lens design; medical optics/ medical image processing; non-linear optics; optical communications; optical fabrication/optical system design; optical testing/metrology; opto-mechanical engineering; polarization; radiometry; remote sensing; semiconductor optical-device modeling; solid-state optics; spectroscopy; interferometry and metrology; statistical optics.

Admission deadlines: 4/17/2022 Domestic: 6 weeks prior to the start of semester. International: 3 months prior to the start of semester.

Year program was founded: 1991

Contact: Dr. Junpeng Guo, Professor

Email: guoj@uah.edu

Website: http://www.uah.edu/OSE/

Mailing address: University of Alabama in Huntsville, 400N Optics Bldg., 301 Sparkman Drive, Huntsville AL 35899 USA

Arizona

The University of Arizona

Tucson, Arizona USA

The University of Arizona James C. Wyant College of Optical Sciences is the world’s premier optical institute, with outstanding faculty members, an international student body, a challenging curriculum, pioneering research programs and close relationships with the optics industry. OSC currently offers the following degree programs: Bachelor of Science in Optical Sciences and Engineering; Professional Graduate Certificate in Optical Sciences; Professional Graduate Certificate in Photonic Communications Engineering; Master of Science in Optical Sciences; Accelerated Master of Sciences in Optical Sciences; Master of Science in Photonic Communications Engineering; Master of Science in Optical Sciences and M.B.A. Dual Degree; Doctor of Philosophy in Optical Sciences.

Name of department: James C. Wyant College of Optical Sciences

Number of core optics/photonics students currently enrolled in a related program: 130

Number of students in optics/photonics related course work: 450

Number of optics/photonics related courses offered in this program: 138

Optics/photonics related programs/degrees offered: Certification: The Professional Graduate Certificate in Optical Sciences is designed for professionals with bachelor’s degrees who wish to supplement their post-baccalaureate practical knowledge with formal graduate coursework. Certificate students may enroll on campus or by distance through the University of Arizona Outreach College. Students complete 15 units of optics courses with a grade of B or higher. After earning a certificate, students may, upon admission, apply all 15 units toward the M.S. in Optical Sciences degree. International students who complete the certificate entirely by distance are exempt from the university’s TOEFL requirement. // The Professional Graduate Certificate in Photonic Communications is a 15 unit professional graduate certificate designed to provide an opportunity for graduate students and industry members who possess related degrees to earn a certificate in the engineering specialization of Photonic Communications. Certificate students may enroll on campus or by distance through the University of Arizona Outreach College. Graduates of this program will be poised to contribute to the photonic communications industry by creating technology solutions to address the global demand for improved telecommunications; and by possessing the necessary vision and knowledge base to successfully venture into technology commercialization. The Bachelor of Science in Optical Sciences and Engineering is designed, in response to national need, to educate optical engineers who will be productive immediately upon graduation in areas involving lasers, optical design, optical detectors, optical fabrication and testing, optical fiber communications, and optical instrumentation. This ABET-accredited program is administered jointly through the College of Optical Sciences and the College of Engineering. To supplement the required core courses, students choose from the following technical elective tracks: Opto-Mechanics; with a concentration in mechanical engineering; Opto-Electronics; with a concentration in electrical engineering; Optical Materials; with a concentration in materials science; and Optics. The Optics track is the most flexible curriculum, as students can choose elective courses from any related science and engineering field, as well as some business courses, with approval from the advisor. There is an option in the junior year to apply to the Accelerated Master’s Program for the students part graduate students in their senior year, such that after one additional year of study the student also obtains their M.S. degree in Optical Sciences. The Master of Science in Optical Sciences program prepares students to enter an exciting career in industry or to continue their educations in the Ph.D. program. M.S. in Optical Sciences students may customize their programs to meet their goals, choosing to complete either a thesis or masters report. The thesis option requires 24 units of optics graduate-level courses, with grades of B or higher, and eight thesis units. The report option requires 35 units of optics graduate-level courses, with grades of B or higher, three of which must be masters report units. The M.S. in Optical Sciences can be completed on campus or by distance through the University of Arizona Outreach College, with minimal campus visits. There is a sub-plan in Optomechanical Engineering allowing specialized studies in the fabrication, tolerancing, alignment, operation, stability, design, and testing of optical systems and their associated mounting and control systems. The Master of Science in Photonic Communications Engineering degree is offered through the College of Optical Sciences and the College of Engineering. Graduates are poised to create technology solutions to address the global demand for improved telecommunications, possessing the necessary vision and knowledge base to successfully venture into technology commercialization. As with the M.S. in Optical Sciences, students can choose to complete either a thesis or masters report. Both options required a B grade or higher in 35 units of coursework. For thesis students, this includes at least two laboratory courses and six research units; for master’s report students, this includes three laboratory courses. Core curriculum courses are offered by distance; laboratory work may be completed in a single master’s lab or at a distance. The Doctor of Philosophy in Optical Sciences program prepares students for extraordinary careers and unlimited opportunities in a fast-changing, high-tech world. Ph.D. in Optical Sciences students must take at least one graduate course in each of eight topic areas defined by the core curriculum, which is designed to provide a broad background in all areas of optics. The balance of the coursework is extremely flexible, and students may expect to have the opportunity to explore all of the possibilities that interest them. Doctoral candidates complete 72 units of optics graduate-level work, including two optics lab courses and 18 units of dissertation. With approval of the dissertation director, the total course units of 54 may be reduced to a minimum of 45 units. As they progress, mentored by the college’s faculty members, students pass a series of four exams, culminating in the final doctoral dissertation defense.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Optical systems design; interferometry and optical testing; illumination engineering; nonimaging optics; radiometry; remote sensing; optical detectors; optical thin-film; scanning probe microscopies; nuclear, X-ray and optical medical imaging; aerospace imaging; lasers; photonic devices; optical data storage; optical communications; diffractive and binary optics; novel optical materials; adaptive optics; nonlinear optics; optical trapping and cooling of atoms; space optics; telescopes; semiconductor and solid state laser physics; optomechanical
University of Arkansas at Fayetteville

Fayetteville, Arkansas USA

Research facilities include well-equipped research laboratories in quantum optics, nonlinear optics, high pressure physics, magnetic materials, surface physics and computer graphics. The laboratories possess a complete range of equipment including ultra-violet, visible and infrared gas lasers, ultra-high stability CW dye and solid-state laser systems, femtosecond and ultra-high power pulsed solid state laser systems, and a SQUID magnetometer. An advanced multi-chamber molecular beam epitaxy (MBE) growth facility is available in the department for fabricating and characterizing semiconductor heterostructures. Excellent sample characterization and research facilities equipped with X-ray diffractometer (SRD), TE14 scanning electron microscope (SEM), atomic force microscope (AFM), Raman spectrometer, etc., are available at HiDEC. These offer great opportunities for frontier research in lasers, nonlinear and quantum optics, and semiconductor materials.

Name of department: Physics

Number of core optics/photonics students currently enrolled in a related program: 15

Number of students in optics/photonics related course work: 30

Number of optics/photonics related courses offered in this program: 25

Options/photonics related programs/degrees offered: Bachelor of Arts; Bachelor of Science; Masters of Science in Physics; PhD in Physics

Type/Description of disciplines/program tracks offered: Physics Academic and research specialties related to optics/photonics: atomic physics, laser physics, nonlinear optics, quantum optics; condensed matter; theoretical physics; astronomy; biophysics.

Admission deadlines: Applications are accepted throughout the year.

Year program was founded: 1972

Contact: Dianne Melahn, Office Manager

Email: dmelahn@uark.edu

Website: http://www.uark.edu/depts/physics/

Mailing address: PHYS-226, 1 University of Arkansas, 825 W. Dickson St., Fayetteville AR 72701 USA

California Institute of Technology

Pasadena, California USA

Faculty members, postdoctoral scholars, and graduate students of the Andrew and Peggy Cherng Department of Medical Engineering at Caltech (MedE) apply engineering principles in the health sphere. Our goal is to design and fabricate devices and systems for translational medicine—including diagnostics, therapeutics, implants, and non-invasive imaging—that will lead to cheaper, more effective, and more accessible health care.

Name of department: Andrew and Peggy Cherng Department of Medical Engineering

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Contact: Christine Garske, Medical Engineering Option Manager

Email: cggarske@caltech.edu

Website: http://www.mede.caltech.edu/

Mailing address: 1200 E. California Blvd., MC136-93, 391 S Holliston Ave, Pasadena CA 91106 USA

California Polytechnic State University

San Luis Obispo, California USA

We offer undergraduate electives EE403/443 along with EE418/458 at the graduate level we offer EE520 (fourier optics) and EE534 (Graduate Photonics)

Name of department: Electrical Engineering

Number of core optics/photonics students currently enrolled in a related program: 25

Number of students in optics/photonics related course work: 25

Number of optics/photonics related courses offered in this program: 4

Options/photonics related programs/degrees offered: BSEE with specialization in photonics; MS with specialization in photonics

Type/Description of disciplines/program tracks offered: Electrical engineering

Contact: Prof. Dennis Derickson, Assistant Professor

Email: ddericks@calpoly.edu

Website: http://www.ee.calpoly.edu
California State University at Fullerton
Fullerton, California USA
Name of department: Physics
Number of core optics/photronics students currently enrolled in a related program: 9
Number of students in optics/photronics related course work: 9
Number of optics/photronics related courses offered in this program: 3
Optics/photronics related programs/degrees offered: BS in Physics; MS in Physics
Type/Description of disciplines/program tracks offered: Physics
Contact: Jim Feagin, Department Chair
Email: jfeagin@fullerton.edu
Website: http://physics.fullerton.edu
Mailing address: California State Univ. at Fullerton, Dept. of Physics, PO Box 6866, Fullerton CA 92834-6866 USA

San Diego State University
San Diego, California USA
The San Diego State University electro-optics program provides students with a BS or MS in physics with an emphasis in electro-optics. There is a strong base in optics with two senior/MS-level lecture courses. However the program is unique in the amount of hands-on laboratory provided to each student. We have a solid sequence of lab courses from the freshman year through the master’s program. The senior/MS optics laboratory allows exploration of seven different areas of key interest to optics. Every student also performs a thesis project, many of which are published in refereed journals.

Name of department: Physics
Number of core optics/photronics students currently enrolled in a related program: 14
Number of optics/photronics related courses offered in this program: 4
Optics/photronics related programs/degrees offered: BS in Physics; MS in Physics
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Fiber optics
Academic and research specialties related to optics/photronics: Teaching lab includes holography, pattern recognition, AO modulators, EO modulators and polarization, laser resonators, fiber pulse dispersion, Fourier transform spectroscopy, erbium fiber amplifiers and modeling dielectric optical coatings with BNC cable structures. Research specialties include optical pattern recognition, spatial light modulators, programmable optics, ultrafast lasers, and tunable diode laser spectroscopy.

Admission deadlines: Undergraduate: November 30; Graduate: March 1
Year program was founded: 1970
Additional comments: Graduate tuition depends on # of courses and California residency
Contact: Jeffrey A. Davis, Professor of Physics
Email: jeffrey.davis@sdsu.edu
Website: http://www.physics.sdsu.edu
Mailing address: Department of Physics, San Diego State University, San Diego CA 92182-1233 USA

San Francisco State University
San Francisco, California USA
Name of department: Physics and Astronomy
Number of core optics/photronics students currently enrolled in a related program: 10
Number of students in optics/photronics related course work: 20
Number of optics/photronics related courses offered in this program: 2
Optics/photronics related programs/degrees offered: BS in physics, BA in physics; MS in physics
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Photonic metamaterials
Year program was founded: 1998
Contact: Weining Man, Associate Professor
Email: weining@sfsu.edu
Website: http://physics.sfsu.edu/
Mailing address: 1600 Holloway Ave, Thornton Hall, Room 334, San Francisco CA 94132 USA

San Jose State University
San Jose, California USA
The Department of Physics and Astronomy prepares students for a variety of careers in science and engineering. We provide students with a solid foundation to pursue industrial employment or graduate work in Physics, Optics, Astronomy, Engineering, and related areas of the physical sciences. Our small class sizes enable us to provide students individual attention, and (in the lab classes) substantial hands-on experience. SJSU is committed to serving the Silicon Valley community, and students can benefit from the multitude of nearby technical companies and employment.

Name of department: Physics and Astronomy
Number of core optics/photronics students currently enrolled in a related program: 10
Number of students in optics/photronics related course work: 20
Number of optics/photronics related courses offered in this program: 3
Optics/photronics related programs/degrees offered: Physics (BA and / BS); Physics; Physics with Concentration in Modern Optics; Physics with concentration in Computational Physics
Type/Description of disciplines/program tracks offered: Physics; Optics
Admission deadlines: See SJSU website for details: http://www.sjsu.edu
Year program was founded: 1990
Contact: Neil Switz, Assistant Prof.
Email: neil.switz@sjsu.edu
Website: http://www.physics.sjsu.edu
Mailing address: San Jose State University, Dept. of Physics, SCI-148, One Washington Square, San Jose CA 95192-0106 USA

Sonoma State University
Rohnert Park, California USA
The MS-CES degree at SSU, a multidisciplinary degree is built on the fundamentals of applied physics, applied mathematics, and computer science, focusing on applying these fields to the design, analysis and synthesis of solving engineering problems. The MS-CES curriculum, designed to further working skills and practical knowledge of engineers, computer scientists and similar professionals, emphasizes small classes, individual attention, and hands-on learning; benefits from a state-of-the-art laboratory component in many of the required and elective courses. Course options, including optics, computer systems, communications and networking, augment the firm base in mathematics, computer science and physics. The BS degree focusses in the area of electronics and communications with electives in various areas such as photonics and optical fiber communications. The Program offers scholarship and internship opportunities with local high tech industries.

Name of department: Computer and Engineering Science Program
Number of core optics/photronics students currently enrolled in a related program: 30
Number of students in optics/photronics related course work: 10
Number of optics/photronics related courses offered in this program: 4
Optics/photronics related programs/degrees offered: BS in Engineering Science with specialization in Electronics and Communications; MS in Computer and Engineering Science with specializations in (i) Communication and Photonics, and, (ii) Computer Hardware and Software Systems.

Type/Description of disciplines/program tracks offered: Electrical engineering
Academic and research specialties related to optics/photronics: Photonics, Optical Fiber Communication, Optical Networking
Admission deadlines: No deadlines.
Year program was founded: 2001
Contact: Dr. Farid Farahmand, Chairman
Email: farahman@sonoma.edu
Website: http://www.sonoma.edu/engineering
Mailing address: Sonoma State University, Dept. of Engineering Science (Salazar Hall #2004), 1801 E. Cotati Ave., Rohnert Park CA 94928 USA

Stanford University - Applied Physics
Stanford, California USA
Name of department: Applied Physics
Number of core optics/photronics students currently enrolled in a related program: 18
Number of students in optics/photronics related course work: 10
Number of optics/photronics related courses offered in this program: 18
Optics/photronics related programs/degrees offered: MS in Applied Physics, either en route to the PhD or a terminal MS. No financial aid provided for the MS; PhD in Applied Physics with financial aid usually provided.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Admission deadlines: Application specific deadline date information (subject to change) will be available in July at http://web.stanford.edu/dept/app-physics/cgi-bin/admissions/. Admission to commence autumn quarter only.
Year program was founded: 1968
Contact: Patrice O'Dwyer, Department Academic Manager
Email: podwyer@stanford.edu
Website: http://appliedphysics.stanford.edu
Mailing address: Department of Applied Physics, Stanford University, Spilker Building - Room 11B, Stanford CA 94305-4090 USA

University of California, Davis
Davis, California USA
Name of department: Biomedical Engineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 20
Optics/photonics related programs/degrees offered: Certification: Designated Emphasis in Biophotonics and Bioimaging; UC Davis CAMPEP Approved Radiation Oncology Physics Residency Program
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering
Contact: Vivek Srinivasan, Associate Professor
Email: vsriniv@ucdavis.edu
Website: https://bme.ucdavis.edu/biophotonics/
Mailing address: 451 E Health Sciences Dr., Davis CA 95616 USA

University of California, Irvine
Irvine, California USA
Name of department: Physics and Astronomy
Contact: Professor Peter Taborek, Chair
Email: pltaborek@uci.edu
Website: https://www.physics.uci.edu
Mailing address: University of California, Irvine, Department of Physics and Astronomy, 4129 Fredrick Reines Hall, Irvine CA 92647-4575 USA

University of California, Santa Barbara
Santa Barbara, California USA
Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 75
Number of students in optics/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: BSEE; MS; PhD
Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics; Fiber optics
Admission deadlines: March
Contact: Pochi Yeh, Professor
Email: pochi@ece.ucsb.edu
Website: http://www.ece.ucsb.edu
Mailing address: Univ. of California/Santa Barbara, Dept. of ECE, Santa Barbara CA 93106 USA

University of California at Santa Cruz
Santa Cruz, California USA
Name of department: Physics
Optics/photonics related programs/degrees offered: Bachelors, Masters and Doctoral programs offered.
Type/Description of disciplines/program tracks offered: Physics
Contact: David Sugg, Graduate Programs Advisor
Email: dsugg@ucsc.edu
Website: http://www.physics.ucsc.edu/
Mailing address: UC Santa Cruz, Physics Department, 1156 High Street, Santa Cruz CA 95064 USA

University of Southern California
Los Angeles, California USA
USC has developed a strong program of research and education in optics and optics-related disciplines, with special emphasis on photonic science and technology. The primary research and teaching activities are located in the Departments of Electrical and Computer Engineering-Electrophysics and Electrical and Computer Engineering-Systems, with additional research and teaching activities in the Departments of Biomedical Engineering, Ophthalmology, Chemistry, and Physics, as well as in the Neuroscience Graduate Program. Faculty and students with related research interests participate in any of several centers and institutes, hold regular seminar series, and form focal points around which industry-university collaborative programs can be developed and implemented (e.g., the Center for Photonic Technology, the Institute for Biomedical Therapeutics (formerly the National Science Foundation Engineering Research Center on Biomimetic MicroElectronic Systems), the Center for Vision Science and Technology, the Signal and Image Processing Institute, the Center for Neural Engineering, and the Integrated Media Systems Center).
Name of department: Ming Hsieh Department of Electrical Engineering, Viterbi School of Engineering
Number of core optics/photonics students currently enrolled in a related program: 40
Number of students in optics/photonics related course work: 70
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: M.S. in Electrical Engineering; Ph.D. in Electrical Engineering
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Physical optics, nonlinear optics, hybrid electronic/photonic packaging, smart/imersive cameras, intraocular and extracocular cameras for retinal prostheses, semiconductor diode lasers, optical phase conjugation, optical signal processing, integrated optics, fiber optics, volume holographic optical elements, diffractive optical elements, optical materials, optical thin film deposition and characterization, optical communications, optical interconnections, optical computing, optical properties of semiconductors, opoelectronic materials, opoelectronic and photonic devices, nanophotonics, photonic implementations of neural networks, photonic bandgap materials and devices, biomedical optics, biophotons, physiology of vision, and visual psychophysics.
Year program was founded: 1971
Contact: Prof. Armand R. Tanguay, Jr., Professor
Email: atanguay@usc.edu
Website: https://mingshiehecce.usc.edu/
Mailing address: University of Southern California, 520 Seaver Science Center, University Park, MC-0483, Los Angeles CA 90089-0483 USA

Colorado School of Mines
Golden, Colorado USA
Name of department: Physics
Contact: Dr Jeff Squier, Department Head
Email: jsquier@mines.edu
Mailing address: Department of Physics, 1322 West Campus Road, Colorado School of Mines, Golden CO 80401 USA

Colorado State University
Fort Collins, Colorado USA
Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 35
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: Certification offered. BSEE with a concentration in Lasers and Optics; MSEE; PhD
Type/Description of disciplines/program tracks offered: Electrical engineering
Academic and research specialties related to optics/photonics: extreme ultraviolet lasers and applications, ultrafast lasers, photonic biosensors, semiconductor laser diodes
Year program was founded: 1992
Contact: Prof. Kevin Lear
Email: Kevin.Lear@ColoState.edu
Website: http://www.engr.colostate.edu/academic/ece/pages/research_activities.html

Ohio State University
Columbus, Ohio USA
Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 50
Optics/photonics related programs/degrees offered: Certification offered. BSEE with a concentration in Lasers and Optics; MSEE; PhD
Type/Description of disciplines/program tracks offered: Electrical engineering
Academic and research specialties related to optics/photonics: extreme ultraviolet lasers and applications, ultrafast lasers, photonic biosensors, semiconductor laser diodes
Year program was founded: 1992
Contact: Prof. Kevin Lear
Email: Kevin.Lear@ColoState.edu
Website: http://www.engr.colostate.edu/academic/ece/pages/research_activities.html
University of Colorado
at Boulder
Boulder, Colorado USA

Optics at CU-Boulder is a collaborative effort and opportunities span many departments and institutes. The OSEP program offers students extensive training in optics through courses and labs, research laboratory rotations, and an industrial internship which leads to a Certificate in Optics in addition to either the MS or PhD degree in Chemistry, Electrical and Computer Engineering, or Physics. About 20 optics courses are available campus wide with up to 10 offered each year. In ECE students typically take 7-10 optics courses and must pass a specialized area prelim in photonics in order to pursue the PhD.

Name of department: ECE; Physics; Chemistry; JILA; ME; ChE; Applied Math
Number of core optics/photonics students currently enrolled in a related program: 100
Number of optics/photonics related courses offered in this program: 20
Optics/photonics related programs/degrees offered: BS/BA in Electrical and Computer Engineering, Physics or Chemistry; MS in Physics and Chemistry; MS in ECON with specialization in Opto-Electronics; PhD in ECON, Physics, Chemistry, or Chemical Physics
Type/Description of disciplines/program tracks offered: Certificate in Optics for MS and PhD students.

Academic and research specialties related to optics/photonics: ultrafast optical physics and applications; liquid crystal devices, physics and applications; nonlinear optics; optical solitons; atom optics, beam spectroscopy; guided wave optics; rf photonics; semiconductor optoelectronic devices; optical interconnections and computing; optical design and packaging; photorefractive crystals; optical signal processing; diffractive optics, photonic bandgaps, and nano-photonics.

Year program was founded: 1987
Contact: Rafael Piestun, Professor
Email: rafael.piestun@colorado.edu
Website: http://optics.colorado.edu/faculty.html
Mailing address: University of Colorado at Boulder, Dept of Electrical and Computer Engineering, 425 UCB, Boulder CO 80309-0425 USA

University of Denver
Denver, Colorado USA

Name of department: Physics and Astronomy
Contact: Faun Lee, Assistant to Chair
Email: faun.lee@du.edu
Website: https://physics.du.edu
Mailing address: University of Denver, Physics Building 211, 2112 East Wesley Ave, Denver CO 80208 USA

DELWARE

University of Delaware
Newark, Delaware USA

Housed within the College of Engineering and operated through the Electrical and Computer Engineering Department, the Center for Innovative Multi-disciplinary Photonic Architectures using Complementary Technologies (IMPACT) was conceived to enhance interdisciplinary research within the University of Delaware and between the University and It’s outside collaborators. The IMPACT Center facilitates research across multiple disciplines, including nanotechnology; photonic materials and devices, advanced interconnect architectures for information processing systems, and Terahertz & millimeter wave technology and applications. The overall mission of the IMPACT Center is to provide a bridge between emerging photonic technologies and advanced applications.

Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 40
Optics/photonics related programs/degrees offered: Masters and doctoral programs offered in electrical engineering
Contact: Prof. Michael W. Haney, Director, IMPACT Photonics Center
Email: haney@ece.udel.edu
Website: http://www.ece.udel.edu/impact/index.htm
Mailing address: University of Delaware, Evans Hall, Newark DE 19716 USA

DISTRICT OF COLUMBIA

Catholic University of America
Washington, District of Columbia USA

Name of department: EECS/BE/ME/PH
Number of core optics/photonics students currently enrolled in a related program: 15

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Number of students in optics/photonics related course work: 15
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: B.EE: Bachelor in Electrical Eng., B.BE: Bachelor in Biomedical Eng., B.ME: Bachelor in Mechanical Engineering; BS: Bachelor of Science; MS in EE, BE, ME; PhD in EE, BE, ME
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Biomedical optics
Academic and research specialties related to optics/photonics: Computational Optics, 3D Imaging, Holography and Interferometry, Spectrometry, Biomedical Image Processing, and Computer vision, Nanotechnology
Accreditation Program: EECS, BE, ME
Accreditation Organization: ABET
Contact: Dr. George Nehmetallah, Associate Prof.
Email: nehmetallah@cua.edu
Website: https://engineering.catholic.edu/
Mailing address: The Catholic University of America, 620 Michigan Ave NE, Washington DC 20064 USA

Georgetown University
Washington, District of Columbia USA
Georgetown offers both a B.A. or B.S. in Physics, and a physics graduate program. Ph.D. students have the option of pursuing one of two programs during their first two years, after which they begin thesis research. Georgetown offers a standard physics track and the Industrial Leadership in Physics (ILP) track. Students in both programs take standard coursework in advanced physics. Students in the ILP program will also take courses in business and entrepreneurship. Before beginning thesis research, they complete a year-long industrial internship. These students gain experience solving industrial problems and develop skills in communication, research, and teamwork. The ILP training gives graduates the expertise needed to be scientists and leaders in industry.
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 15
Number of optics/photonics related courses offered in this program: 2
Optics/photonics related programs/degrees offered: B.A./B.S. – Physics; M.S. – Physics; Ph.D. – Physics
Type/Description of disciplines/program tracks offered: Physics
Year program was founded: 2001
Contact: Ms. Amy Hicks, Graduate Program Coordinator
Email: graduateprogram@physics.georgetown.edu
Website: http://www.physics.georgetown.edu
Mailing address: Georgetown University, Department of Physics, 37th & O St. NW, Reiss Science Bldg. Room 505, Washington DC 20057 USA

Florida Institute of Technology
Melbourne, Florida USA
Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: BS Electrical Engineering; MS Electrical Engineering; Ph.D. Electrical Engineering
Type/Description of disciplines/program tracks offered: Electrical engineering; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Fiber Optics, Fiber Optic Communications, Fiber Optic Sensors.
Year program was founded: 1958
Contact: Syed H. Murshid, Professor, Director of Optronics Laboratory
Email: murshid@ee.fit.edu
Website: http://coe.fit.edu/ee/
Mailing address: Department of Electrical and Computer Engineering, 150 West University Boulevard, Melbourne FL 32901 USA

University of Central Florida
Orlando, Florida USA
Name of department: CREOL, The College of Optics and Photonics
Number of core optics/photonics students currently enrolled in a related program: 338
Number of students in optics/photonics related course work: 353
Number of optics/photonics related courses offered in this program: 65
Optics/photonics related programs/degrees offered: B.S. Photonic Sciences and Engineering; MS Optics and two 12 Month Accelerated MS Tracks: One track in Optics and one track in Photonics. PhD Optics & Photonics. Other UCF programs include: MS in Electrical Engineering, PhD Electrical Engineering, MS Physics, PhD Physics.
Type/Description of disciplines/program tracks offered: Electrical engineering; Optics; Photonics
Academic and research specialties related to optics/photonics: The research activities in CREOL span the spectrum from fundamental science to prototype development, and pursue joint research projects with industry, academia, and government laboratories. Research areas include Lasers, Fiber Optics, Semiconductor and Integrated Optics, Nonlinear and Quantum Optics, and Imaging, Sensing, and Display. Researchers/instructors are always seeking new opportunities to work with industry to expose students to the industrial environment and to aid in technology transfer.
Admission deadlines: January 15, for International Student and priority Fellowships. July 1 for US resident admission. BS PSE. Deadline corresponds to the UCF application and admission calendar. The BS PSE program is an open access program; no application is required for access to the program after acceptance to UCF.
Year program was founded: 1987
Contact: Graduate: Associate Dean/Program Director-Dr. David J. Hagan Sr. Admissions Specialist-Alma Montelongo., BS PSE: Associate Director-Mike McKee
Email: Gradprog@creol.ucf.edu; BS PSE undergrad@creol.ucf.edu
Website: http://www.creol.ucf.edu
Mailing address: UCF-College of Optics and Photonics, 4304 Scorpius St., Bldg 53, P.O. Box 162700, Orlando, FL 32816-2700 USA

University of Florida
Gainesville, Florida USA
A multidisciplinary materials science department covering specialties ranging from metals to glass/ceramics to semiconductors to optical materials.
Name of department: Materials Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 300
Optics/photonics related programs/degrees offered: BS in Materials Science and Engineering
Academic and research specialties related to optics/photonics: Optical Materials
Year program was founded: 1960
Contact: Prof. Franky So, Professor
Email: fso@mse.ufl.edu
Website: http://www.mse.ufl.edu
Mailing address: Univ. of Florida, Rm 156, Rhines Hall, MS&E Dept., PO Box 116400, Gainesville FL 32611-6400 USA

Georgia Institute of Technology
Atlanta, Georgia USA
Name of department: Electrical Engineering; Physics; Chemistry; Material Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 120
Number of students in optics/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 35
Optics/photonics related programs/degrees offered: B.S. in Electrical Engineering; B.S. in Physics. Masters of Electrical Engineering; Masters of Physics; Masters in Chemistry; Masters in Material Science and Engineering. PhD in Electrical Engineering; PhD in Physics; PhD in Chemistry; PhD in Material Science and Engineering.
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Biomedical optics
Academic and research specialties related to: optics/photonics: biophotonics, diffractive optics, ultrafast optics, photonics.
Optics and Photonics Education Directory 2020/2021

**UNDERGRADUATE/GRADUATE PROGRAMS**

**IDAHO**

**Boise State University**

Boise, Idaho USA

Name of department: Electrical and Computer Engineering

Number of core optics/photonics students currently enrolled in a related program: 275

Number of students in optics/photonics related course work: 15

Number of optics/photonics related courses offered in this program: 3

Optics/photonics related programs/degrees offered: BS Electrical Engineering, concentration in signal and image processing. MS Electrical Engineering or MS Computer Engineering, Concentration in signal and image processing, photonic devices or integrated circuit design. PhD in Electrical and Computer Engineering. Concentration in signal and image processing, photonic devices or integrated circuit design.

Type/Description of disciplines/program tracks offered: Electrical engineering


Admission deadlines: Fall admission deadline in mid May, Spring Admission deadline in early December. Doctoral program deadlines are annually in early January to be considered for graduate assistantships.

Year program was founded: 1997

Contact: Dr. Wan Kuang, Associate Professor

Email: wankuang@boisestate.edu

Website: http://coen.boisestate.edu

Mailing address: Boise State University, Dept. of Electrical and Computer Engineering, 1910 University Dr., Boise ID 83725-2075 USA

**ILLINOIS**

**Illinois Wesleyan University**

Bloomington, Illinois USA

All physics majors, regardless of concentration, are expected to have a set of experiences that, overall, co-values the “three-legged stool” of • Physics formalism, • Computer methods (integrated into our offerings within the department), and • Hands-on instruction in experimentation (which we offer more of than any physics department in the midwest).

Name of department: Physics

Number of core optics/photonics students currently enrolled in a related program: 50

Number of students in optics/photonics related course work: 100

Number of optics/photonics related courses offered in this program: 5

Optics/photonics related programs/degrees offered: Physics (with concentration in Applied Laser Physics & Imaging Science, or AstroPhysics, or BioPhysics).

Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Quantum Optics; Biomedical optics

Accreditation Organization: Higher Learning Commission of the North Central Association of Colleges and Schools

Admission deadlines: Students can submit an application under Regular Decision at any time. Decisions for students applying under Regular Decision are mailed after December 15. Students admitted under Regular Decision have until May 1st to make a college selection.

Year program was founded: 1850

Contact: Gabriel Spalding, Ames Professor of Physics, Institutional Liaison for dual-degree programs

Email: gspsaldin@iwu.edu

Website: https://www.iwu.edu/physics/

Mailing address: 201 E. Beecher St., Bloomington IL 61701-7222 USA

**University of Illinois Urbana-Champaign, Illinois USA**

Name of department: Department of Physics

Number of core optics/photonics students currently enrolled in a related program: 80

Number of students in optics/photonics related course work: 600

Number of optics/photonics related courses offered in this program: 3

Optics/photonics related programs/degrees offered: B.S. in Engineering Physics; B.S. in LAS Physics; M.S. in Physics; Ph.D. in Physics

Type/Description of disciplines/program tracks offered: Physics

Academic and research specialties related to: optics/photonics: optical investigations of quantum information; optical quantum memory and “delayed-choice quantum cryptography”; magneto-optic traps; quantum simulation; producing and controlling entangled states of photons; silicon nanoparticles for optoelectronics applications; optical effects in solids.

Admission deadlines: See http://www.physics.illinois.edu/prospective

Year program was founded: 1890

Contact: John D. Stack, Associate Head for Graduate Programs

Email: j-stack@illinois.edu

Website: http://www.physics.illinois.edu

Mailing address: Department of Physics, University of Illinois at Urbana-Champaign, 1100 West Green Street, Urbana IL 61801-3080 USA

**University of Illinois at Chicago**

Chicago, Illinois USA

Name of department: Physics

Number of core optics/photonics students currently enrolled in a related program: 30

Number of students in optics/photonics related course work: 500

Number of optics/photonics related courses offered in this program: 4

Optics/photonics related programs/degrees offered: BS Physics, BA Physics, BS Engineering Physics; Masters and Doctoral programs available.

Type/Description of disciplines/program tracks offered: Physics

Academic and research specialties related to: optics/photonics: Ultrafast spectroscopy; laser development, laser-driven biomolecular dynamics; IR detector development; solar cell efficiency enhancement.

Admission deadlines: International student deadline: February 15; Domestic student deadline: May 15

Year program was founded: 1975

Email: physics@uic.edu

Website: http://phys.uic.edu/
INDIANA

Rose-Hulman Institute of Technology
Terre Haute, Indiana USA

Emphasis is placed on lab work with a hands-on approach. Our teaching/research laboratories are equipped with the most modern equipment. Our curriculum includes 11 optics courses with corresponding labs. In the optical engineering design process the goal of understanding the problem and finding a solution and design is of utmost importance. The Bachelors/Masters OE Program has been developed with input from representatives of the optics industry, international experts, educators, and alumni. Core topics in the curriculum include: holography, optical fibers/application, electro-optics, lens design, metrology, optical instrumentation, semiconductor devices, biomedical optics, microsensors, lasers and applications, and optical image processing. The Program has been continuously evolving into one of the strongest with input from representatives of the optics industry, international experts, educators, and alumni of our program. Rose-Hulman Institute of Technology is a private, fully accredited engineering and science college located at the eastern edge of Terre Haute, Indiana. With an enrollment of 1,800 undergraduate and 150 master’s level students, Rose-Hulman is the ideal size for modern engineering and science education. It offers complete engineering, science and mathematics curricula in state-of-the-art laboratories. In addition to optics, engineering physics, and physics, students coming to Rose-Hulman can also gain valuable exposure to chemistry, computer science, economics, mathematics, and various engineering disciplines. Rose-Hulman has always enjoyed a reputation for excellence in publications such as “Barron’s Guide to the Most Prestigious Colleges” and “The New York Times Selective Guide to Colleges”. Rose-Hulman has been selected as #1 Undergraduate Engineering college in the nation by “U.S. News and World Report Best Colleges Guide” for the year a record 13 years in a row.

Name of department: Physics and Optical Engineering

Number of core optics/photonics students currently enrolled in a related program: 66
Number of students in optics/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 30
Optics/photonics related programs/degrees offered: Certification: Certificate in Semiconductors Materials and Devices and Optical Communications; BS in Physics, BS in Optical Engineering, BS in Engineering Physics; MS in Optical Engineering

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to: optics/photonics: Optical instrument design, fiber optic components/sensors, light scattering, computer-aided optical system design, speckle techniques holography, psi, structural/magnetic properties of materials, nanostructured, nanoparticle magnetic materials, x-ray absorption studies with synchrotron radiation, UV-visible absorption/fluorescence studies, semiconductor materials/packaging, microscopy/complexity, lasers, high power laser systems, nonlinear optics, applications of photorefractive materials/optical phase-conjugation, optical/magneto-optical studies of II-VI magnetic heterostructures/integrated optics.

Year program was founded: 1985
Contact: Dr. Galen Duree, Jr., Chair
Email: Galen.Duree@rose-hulman.edu
Website: http://www.rose-hulman.edu/phone
Mailing address: Physics and Optical Engineering, Rose-Hulman Institute of Technology, 5500 Wabash Ave., CM 169, Terre Haute IN 47803 USA

MASSACHUSETTS

Boston University
Boston, Massachusetts USA

Our program offers a spectrum of graduate education in photonics. The Ph.D. study in photonics offer challenging, coordinated classroom, laboratory and project work in the science and technology of light. With the resources and entrepreneurial environment of the Photonics Center, students can prepare for industry careers or further Ph.D. study with faculty from engineering, physics, chemistry, and other disciplines. Campus Centers, the Fraunhofer Center for Manufacturing Innovation enrich the program. Boston is an intellectual center for education, high technology and especially photonics, creating many opportunities for industry collaboration.

Name of department: The Boston University Photonics Center

Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 19
Optics/photonics related programs/degrees offered: We offer a BS in Electrical Engineering, Computer Systems Engineering, Physics, Bio Medical Engineering, Mechanical Engineering and Chemistry. We offer a MS in Electrical Engineering or in Computer Systems Engineering. EE or CSE majors may elect courses and do thesis or project work in optics and photonics. We offer a PhD in Electrical, Computer or Systems Engineering. Students can work with Photonics faculty on photonics and optics research in various Ph.D. areas in engineering and the sciences.

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Academic and research specialties related to: optics/photonics: Our degree programs offer concentrations in lasers; fiber optics and communications; and photonic materials and devices; research groups in compound semiconductor devices; photodetectors; simulation of optoelectronic devices; magneto-optical materials; MBE of III-V compounds; quantum optics; MEMS adaptive optics; nanophotonics; optical systems; fiber optics; fiber sensors; applied electromagnetics; opto-electronic packaging; additional courses can be imaging.

Admission deadlines: For fall admission, submit applications by January 15. No-aid admission deadline is April 1. Graduate open house in early/mid March for potential aid recipients. October 1 is the deadline for all students matriculating in January.

Year program was founded: 1954
Contact: Thomas Bifano, Professor
Website: http://www.bu.edu/photonics

MARYLAND

Johns Hopkins University - Electrical and Computer Engineering
Baltimore, Maryland USA

The Department of Electrical and Computer Engineering at Johns Hopkins University is committed to providing a rigorous educational experience that prepares students for further study and successful careers and is dedicated to theoretical/experimental research of the field. All students are given opportunities to conduct original research in close association with faculty members. Current research activities include theoretical/experimental investigation of fiber laser and nonlinear fiber optics, broadband optoelectronic devices, optical communications, nonlinear waves, optical properties of various materials, and passive remote sensing of the atmosphere. Additional courses can be taken from the Part-Time Program in Engineering and Applied Science.

Name of department: Electrical and Computer Engineering

Number of core optics/photonics students currently enrolled in a related program: 15
Number of students in optics/photonics related course work: 35
Number of optics/photonics related courses offered in this program: 12
Optics/photonics related programs/degrees offered: BS in Electrical Engineering, BS in Computer Engineering; MS in Electrical Engineering with concentration in Photonics and Optoelectronics; PhD in Electrical Engineering

Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering

Academic and research specialties related to: optics/photonics: Experimental/theoretical work in fiber lasers, fiber-optic communications/devices, solid-state lasers, optoelectronic devices; nonlinear/quantum optics, solitons, nonlinear waves, ultrashort phenomena; reflective properties of ocean surface, linear optical/nonlinear optical properties of various optical materials; optical detection and passive remote sensing of the atmosphere; microwave photonics, broadband microwave signal processing and free-space laser communications.
UNDERGRADUATE/GRADUATE PROGRAMS

Bridgewater State University
Bridgewater, Massachusetts USA

A student aligning a laser cooling set-up at BSU.

Name of department: Physics
Number of optics/photonics related courses offered in this program: 10
Type/Description of disciplines/program tracks offered: Physics - Optics Concentration
Admission deadlines: https://www.bridgew.edu/admissions/

Tufts University
Medford, Massachusetts USA

Applications of optics to biomedical engineering, especially sensing systems. Research and course based M.S. degrees. Ph.D. degrees Many opportunities for collaboration with Boston area hospitals and laboratories.

Name of department: Biomedical Engineering
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 15
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: Certification: Biomedical Engineering, BSBE, BS & Second major in Biomedical Engineering or Biomedical Sciences, MS - Master of Science: with or without thesis. PhD - Doctor of Philosophy.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Biomedical optics

Michigan Technological University
Houghton, Michigan USA

The study of Information Systems at Michigan Technological University is concerned with the transmission, measurement, processing, analysis, and interpretation of information-bearing signals. As such, areas of research in our department include optics, photonics, signal processing, image processing, computer communications, and wireless and digital communications. Students studying information systems in our department choose from a broad offering of courses in the areas of: statistical signal processing; information theory and coding; wireless and digital communications; statistical optics; optical information processing; communication networks; detection and estimation theory; wavelet and spectral analysis; image processing; and multisensor detection. High speed computing facilities and a newly developed state-of-the-art optics laboratory provide an outstanding environment for education, research, and engineering practice in this area.

Name of department: Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: Certificate in Photonics is granted along with the Undergraduate Degree in Electrical Engineering. Research in optics/photonics is usually performed within two of the main core areas of research, electrophysics or information systems. Research in optics/photonics is usually performed within two of the main core areas of research, electrophysics or information systems.
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Photonics; Biomedical optics

Academic and research specialties related to optics/photonics: integrated optics, atmospheric turbulence, image processing, integrated optics, and photonics devices, biomedical optics, meta materials, quantum optics, magneto-optics.
**Saginaw Valley State University**  
University Center, Michigan USA

The Department of Physics offers an Optical Physics major program. Students in the program take most of the classes for a traditional physics major and enhanced it by taking courses in optics. Such as: Physical Optics, Coherent Optics, Laser Physics and Optoelectronics, Modern Optics and Holography Laboratory, and Senior Laboratory in Optics. As a result, graduates have strong hands-on laboratory skills that enable them to do well and work independently in optical engineering positions in industries, as well as the theoretical grounding to succeed in graduate schools.

**Name of department:** Department of Physics  
**Number of students in optics/photonics related course work:** 12  
**Optics/photonics related courses offered in this program:** 6  
**Optics/photonics related programs/degrees offered:** Optical Physics  
**Type/Description of disciplines/program tracks offered:** Physics  
**Academic and research specialties related to optics/photonics:** Coherent Optics, Holography, Interferometry, Fourier Optics, Laser Cooling, Atomic Molecular and Optical Physics, Broadband Holography, Laser Trapping, Imaging through Turbulent Media, Electronic Holography, Spectral Holography  
**Contact:** Matthew Vannette, Department Chair and Associate Professor of Physics  
**Email:** mvannett@svsu.edu  
**Website:** http://www.svsu.edu/physics

**University of Michigan**  
Ann Arbor, Michigan USA

Optics and photonics faculty and students are exploring biophotonics, photonic MEMS, optoelectronics in quantum structures, nanophotonics, ultrafast optics, quantum optics, and fiber and integrated photonics and lasers. Research ranges from fundamental science to emerging applications and devices, including quantum computing, on-chip micron-scaled resonators, microsensors, metamaterials, in vivo biological imaging and sensing, and biophysical studies of biomolecular structure.

**Name of department:** Electrical Engineering and Computer Science  
**Number of core optics/photonics students currently enrolled in a related program:** 47  
**Number of students in optics/photonics related course work:** 200  
**Optics/photonics related courses offered in this program:** 15  
**Optics/photonics related programs/degrees offered:** MSE in Electrical and Computer Engineering MS in Electrical and Computer Engineering. PhD in Electrical and Computer Engineering  
**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics  
**Academic and research specialties related to optics/photonics:** Optics and photonics students are exploring frontiers of optics, including biophotonics, photonic MEMS, optoelectronics in quantum structures, nanophotonics, ultrafast optics, quantum optics, and fiber and integrated photonics and lasers. Research ranges from fundamental science to emerging applications and devices, including quantum computing, on-chip micron-scaled resonators, microsensors, metamaterials, in vivo biological imaging and sensing, and biophysical studies of biomolecular structure.

**Accreditation Program:** ABET  
**Accreditation Organization:** ABET  
**Admission deadlines:** December 15, PhD; January 15, MSE.  
**Year program was founded:** 1889  
**Contact:** Catharine June, Communications Manager  
**Email:** cmmj@umich.edu  
**Website:** http://eecs.umich.edu

**St. Cloud State University**  
St. Cloud, Minnesota USA

**Name of department:** Department of Physics and Astronomy  
**Number of core optics/photonics students currently enrolled in a related program:** 3  
**Number of students in optics/photonics related course work:** 25  
**Optics/photonics related programs/degrees offered:** Bachelor of Science in Physics (Electro-Optics track); Professional Science Masters in Materials Science and Instrumentation.  
**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Optics; Fiber optics  
**Year program was founded:** 1983  
**Contact:** Dr. John E. Sinko, Associate Professor  
**Email:** jesinko@stcloudstate.edu  
**Website:** http://www.sctcloudstate.edu  
**Mailing address:** St. Cloud State Univ., WSB 324, 720 4th Ave. S., St. Cloud MN 56301 USA

**Missouri University of Science and Technology**  
Rolla, Missouri USA

**Name of department:** Electrical and Computer Engineering  
**Number of students in optics/photonics related course work:** 15  
**Optics/photonics related courses offered in this program:** 10  
**Optics/photonics related programs/degrees offered:** BS Electrical Engineering with a formal emphasis in optics and devices and BS Physics, MS Electrical Engineering concentration in optics/sensors/ imaging; MS Physics concentration in optics. PhD concentration in optics/sensors/imaging  
**Type/Description of disciplines/program tracks offered:** Physics; Electrical engineering  
**Academic and research specialties related to optics/photonics:** Optical Sensors; Smart Structures; Imaging; LED Illumination; Microdevices; Fiber Optic Sensors  
**Admission deadlines:** http://ece.mst.edu/prospectivestudents; http://futurestudents.mst.edu  
**Year program was founded:** 1991  
**Contact:** Dr. Steve E. Watkins, Professor, Electrical and Computer Engineering, Director, Applied Optics Laboratory  
**Email:** watkins@mst.edu  
**Website:** http://apol.mst.edu  
**Mailing address:** Missouri University of Science and Technology, 121 EECH, 301 W. 18th St., , Rolla MO 65409-0040 USA

**Montana State University**  
Bozeman, Montana USA

Students are admitted to a specific department (ECE, Physics, Chemistry) and study optics and photonics through a variety of interdisciplinary courses and research opportunities. We offer a world-class optics education in the unparalleled environment of southwestern Montana.  
**Name of department:** Optical Technology Center  
**Number of core optics/photonics students currently enrolled in a related program:** 30  
**Number of students in optics/photonics related course work:** 50  
**Optics/photonics related programs/degrees offered:** Associate degree(s): Photons and Laser Technology, Bachelor of Science degree in
Princeton University - Electrical Engineering
Princeton, New Jersey USA
Name of department: Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 320
Number of optics/photonics related courses offered in this program: 5
Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering
Contact: Prof. Peter Ramadge, Department Chair
Email: sbraude@princeton.edu
Website: http://www.ee.princeton.edu
Mailing address: Princeton University, Dept. of Electrical Engineering, E-Gquad, B-210, Princeton NJ 08544 USA

Stevens Institute of Technology
Hoboken, New Jersey USA
The Department is home to undergraduate and graduate degree programs in physics with emphasis on the fields of atomic, molecular and optical physics (AMO), solid state electronics, plasma physics and photonics technology. Our research programs, many of which have a strong interdisciplinary character, lead the way in their respective fields of endeavor. Our teaching programs prepare our students for careers in physics related research, and broader areas of technology development. Our research is strongly coupled to applications and we encourage our faculty and students to investigate opportunities for commercial development. This has led to the formation of several startup ventures.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics
Academic and research specialties related to: optics/photonics: Atomic, molecular and optical physics, atomic-electron interactions, low temperature plasma physics, infrared laser spectroscopy, atmospheric physics, ultrafast lasers, optical free space communications, quantum and atom optics.
Admission deadlines: Rolling admissions process through the beginning of the term.

Year program was founded: 1950
Contact: Edward A. Whittaker, Professor
Email: edward.whittaker@stevens.edu
Website: https://www.stevens.edu/schafer-school-engineering-science/ departments/physics-engineering-physics
Mailing address: Dept. of Physics and Engineering Physics, Stevens Institute of Technology, 1 Castle Point Terrace, Hoboken NJ 07030 USA

Optics and Photonics Education Directory 2020/2021
Number of students in optics/photonics related course work: 20
Number of optics/photonics related courses offered in this program: 10
Optics/photonics related programs/degrees offered: Certification: A graduate certificate in Electrical Engineering is available and can be focused in areas of optics, electro-optics or photonics. Electrical Engineering - The undergraduate program, founded in 1989, has approximately 150 students and concentrates on electronics and design with a foundation in circuits, signals and systems. Electrical Engineering - The program focuses on providing students with unique educational opportunities tied to local research facilities such as the National Radio Astronomy Observatory; Langmuir Laboratory; Magdalena Ridge Observatory; Energetic Materials.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering
Academic and research specialties related to optics/photonics: Atmospheric optics; beam propagation; experimental adaptive optics; fiber optics; image processing; interferometry; pattern recognition; optical sensors; spectroscopy; telescope design.
Year program was founded: 1989
Contact: Scott W. Teare, Professor & Program Chair
Email: teare@ee.nmt.edu
Website: http://www.nmt.edu
Mailing address: Electrical Engineering Department, New Mexico Tech, 801 Leroy Place, Socorro NM 87801 USA

New Mexico State University
Las Cruces, New Mexico USA

The optics program at New Mexico State University exists in the departments of Electrical and Computer Engineering, Astronomy, Chemical Engineering, Physics, and Chemistry. Students earn degrees from any of the departments while learning the principles and applications of optics from all. Excellent cooperation among departments provides students with different, but complementary, perspectives. Student/teacher interaction is an integral aspect of the graduate student’s experience at NMSU. Much work is done on a one-to-one basis, providing an excellent atmosphere for learning. Students are given many opportunities to work with modern optical devices and all are required to take laboratory courses.

Name of department: Electrical and Computer Engineering, Physics, Mechanical Engineering, Chemistry, and Astronomy.
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 20
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Bachelors, Masters and Doctoral programs available.
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering: Optics; Photonics
Academic and research specialties related to optics/photonics: Atmospheric optics, micro and nano optics, integrated electro-optical systems, spectroscopy, interferometry, laser beam propagation, polarization sensing, adaptive optics, spatial light modulators, wavefront sensing, optical and laser communications, image processing/pattern recognition, spectrochemistry, optical nanoscience, quantum optics, astronomical optics and sensors, microparticle spectroscopy, nonlinear optics.

Adelphi University
Garden City, New York USA

Adelphi University’s Department of Physics is a growing, thriving program. Faculty research and teaching have a strong focus on optics. In 2006, the department launched its MS in Physics with a concentration in Optics. The MS program is designed to serve both working professionals and recent college graduates. Students may choose from a thesis track or a non-thesis track, and they will benefit from working closely with faculty. Scholarships, teaching assistantships, and research assistantships are available. Adelphi is located on Long Island, about 45 minutes from Manhattan.

Name of department: Department of Physics
Number of core optics/photonics students currently enrolled in a related program: 12
Number of students in optics/photonics related course work: 65
Number of optics/photonics related courses offered in this program: 17
Optics/photonics related programs/degrees offered: B.A. in Physics.; M.S. in Physics with a concentration in Optics
Type/Description of disciplines/program tracks offered: Physics
Year program was founded: 2006
Contact: Joshua Grossman, Assistant Professor (Chair, Graduate Admissions)
Website: http://academics.adelphi.edu/artsci/phy/
Mailing address: Adelphi University, Department of Physics, 1 South Avenue, P.O. Box 701, Garden City NY 11530-0701 USA

Binghamton University, State University of New York
Binghamton, New York USA

Name of department: Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 405
Optics/photonics related programs/degrees offered: BS in Electrical Engineering, BS in Computer Engineering, MS in Electrical Engineering, MEng with Specializations in EE and CoE. PhD in Electrical Engineering
Contact: Kim Murphy, ECE Department Administration Assistant
Email: kmurphy@binghamton.edu
Website: http://www.binghamton.edu/ece
Mailing address: Binghamton University - Electrical and Computer Engineering, Engineering and Science Bldg, Room 2300, 4400 Vestal Pkwy/PO Box 6000, Binghamton NY 13902-6000 USA

The University of New Mexico
Albuquerque, New Mexico USA

More than twenty five participating faculty members cover a broad area of experimental and theoretical optics related research. Primary areas of research include high-resolution (temporal and spatial) imaging, LWIR and MWIR imaging, ultrafast optical phenomena, laser-material interactions, nonlinear optics, laser gyros, laser cooling of solids, atom optics and cooling, quantum optics, laser development, microwave photonics, mode-locked lasers, injection-locked lasers, laser-induced plasmas, biomedical optics, optoelectronic device physics and structure, optoelectronic device simulation, integrated optoelectronic circuits, semiconductor laser fabrication and characterization, vertical-cavity surface-emitting lasers (VCSELs), wide-bandgap group-III nitride devices, dilute group-III nitride materials and devices, detector design and fabrication, photonic integrated circuits, photovoltaics, nanoheteropitaxy, thin film deposition processes, MBE, MOCVD, nanotechnology, nanophotonics, metamaterials, imaging interferometric lithography, quantum dot lasers and detectors, fiber optics, fiber lasers, optical networks, ion beam applications to optics fabrication.

Name of department: Center for High Technology Materials
Number of core optics/photonics students currently enrolled in a related program: 120
Number of optics/photonics related courses offered in this program: 16
Optics/photonics related programs/degrees offered: Certification: Certificate of Excellence in Academic and Technical Training in Optics. BS in Physics with Optics concentration. MS in Optical Science and Engineering MS/SEE in Optical Engineering and Optoelectronics. PhD in Optical Science and Engineering, PhD in Engineering (Optoelectronics).
Academic and research specialties related to: optics/photonics: Optical Science and Engineering (joint Physics/ECE); Optoelectronics (OCE). The Optical Science and Engineering PhD and MS programs are administered by the Optical Sciences Graduate Committee with faculty membership from the two participating departments. An extensive set of optics/laser related mandatory and elective courses are offered regularly.
Year program was founded: 1983
Contact: Doris Williams, OSE Sr. Academic Advisor, Dr. Mansoor Sheikh-Bahae, Chair, Dr. Majeed Hayat, Co-Chair
Email: dorisw@chtm.unm.edu
Website: http://www.optics.unm.edu
Mailing address: Univ. of New Mexico, Center for High Technology Materials, 1315 Goddard SE, MSC04 2710, Albuquerque NM 87106-4343 USA

New York

Adelphi University
Garden City, New York USA

Adelphi University’s Department of Physics is a growing, thriving program. Faculty research and teaching have a strong focus on optics. In 2006, the department launched its MS in Physics with a concentration in Optics. The MS program is designed to serve both working professionals and recent college graduates. Students may choose from a thesis track or a non-thesis track, and they will benefit from working closely with faculty. Scholarships, teaching assistantships, and research assistantships are available. Adelphi is located on Long Island, about 45 minutes from Manhattan.

Name of department: Department of Physics
Number of core optics/photonics students currently enrolled in a related program: 12
Number of students in optics/photonics related course work: 65
Number of optics/photonics related courses offered in this program: 17
Optics/photonics related programs/degrees offered: B.A. in Physics.; M.S. in Physics with a concentration in Optics
Type/Description of disciplines/program tracks offered: Physics
Year program was founded: 2006
Contact: Joshua Grossman, Assistant Professor (Chair, Graduate Admissions)
Website: http://academics.adelphi.edu/artsci/phy/
Mailing address: Adelphi University, Department of Physics, 1 South Avenue, P.O. Box 701, Garden City NY 11530-0701 USA

Binghamton University, State University of New York
Binghamton, New York USA

Name of department: Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 405
Optics/photonics related programs/degrees offered: BS in Electrical Engineering, BS in Computer Engineering, MS in Electrical Engineering, MEng with Specializations in EE and CoE. PhD in Electrical Engineering
Contact: Kim Murphy, ECE Department Administration Assistant
Email: kmurphy@binghamton.edu
Website: http://www.binghamton.edu/ece
Mailing address: Binghamton University - Electrical and Computer Engineering, Engineering and Science Bldg, Room 2300, 4400 Vestal Pkwy/PO Box 6000, Binghamton NY 13902-6000 USA
Cornell University
Ithaca, New York USA
Name of department: School of Applied and Engineering Physics
Number of core optics/photonics students currently enrolled in a related program: 139
Optics/photonics related programs/degrees offered: BS in Engineering Physics, MEng in Engineering Physics, *MS/PhD in Applied Physics. PhD in Applied Physics
Contact: Cynthia Reynolds, Academic Programs Coordinator
Email: cr8@cornell.edu
Website: http://www.aep.cornell.edu
Mailing address: Cornell Univ., School of Applied & Engineering Physics, 212 Clark Hall, Ithaca NY 14853 USA

Queens College of CUNY
Flushing, New York USA
Photonics is the focus of research in the Department of Physics at Queens College of CUNY. With faculty members doing cutting edge research and with the availability of state of the art laboratories, students get opportunity to work on both theoretical as well as experiments topics. Undergraduate, graduate and post-doctoral researchers are involved in research in the Department with the faculty members. Photonics is also one of the flagship initiative areas within the CUNY system and Queens College has one of the strongest programs in this area. M.S. degree in Photonics offered by the college is a Professional Science Master’s program designed to prepare students for immediate employment in Optics and Photonics related industries. This is achieved by emphasizing hands-on laboratory experience, industrial and research internships, non-technical skills such as oral and written communication skills, familiarity with economic aspects of high-tech R&D projects, as well as team building and leadership skills.
Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 25
Number of optics/photonics related courses offered in this program: 15
Optics/photonics related programs/degrees offered: BS in Physics, Department offers the B.S. and B.A. degrees in Physics. There are two tracks for B.A. in Physics: “Physics” and “Applied Physics”. Truly outstanding majors are able to participate in the B.A.-M.A. program upon recommendation of the Department Chair. M.A. in Physics The Physics Department offers a full spectrum of courses and research opportunities leading to the M.A. degree in Physics. This program prepares the student for a variety of scientific careers. The most common of which are Teaching, Medical or Health Physicist, Computer Programming or Physics related jobs in industry. It can also satisfy the first thirty credits required for the Ph.D. degree in Physics. Truly outstanding majors are able to participate in the B.A.-M.A. program upon recommendation of the Department Chair. M.S. in Photonics Professional Science Master’s program. M.S. in Photonics is an innovative industrial employment oriented program, which includes rigorous academic training in Photonics related subjects (Applied Electrodynamics, Optics, Computational Methods, Telecommunication, Optoelectronics, Semiconductors, etc.), emphasizes hands-on laboratory experience, industrial and research internship, development of oral and written communication skills as well as understanding of economic, business and project management aspects of high-tech R&D process. Ph.D. in Physics. Queens College Department of Physics is one of four senior colleges in the City University of New York (CUNY) Ph.D. Physics consortium. The Graduate School of the University is the Ph.D. degree granting institution. The graduate courses are offered at the Graduate School currently located on 34th Street and Fifth Avenue. The research laboratories are located at the individual colleges. The Ph.D. Program is centrally administered and coordinated by the Graduate School.
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics
Academic and research specialties related to optics/photonics: Nano and Micro Photonic structures, Microcavity polaritons, Light propagation in random and periodic medium, spectroscopy of nanostructures, silicon photonics, magnetic thin films, and polymers.
Contact: Lev Deych, Professor of Physics
Email: lev.deych@qc.cuny.edu
Website: http://www.physics.qc.edu/
Mailing address: Department of Physics, Queens College of CUNY, 65-30 Kissine Blvd, Flushing NY 11367 USA

Rensselaer Polytechnic Institute
Troy, New York USA
Research in optical physics is directed toward developing new optical materials and devices such as light emitting diodes and semiconductor diode lasers. We focus on achieving optical characterization of materials such as nanocrystalline metal and semiconductor particles in glass or in organic materials. Experimental measurements gains further understanding of the optical properties of novel materials. Another area of optics research is theory, fabrication, and experimental assessment of photonc crystal structures. Ultrafast photonics and optoelectronics involve the generation and detection of picosecond and femtosecond electromagnetic pulses. Of particular interest are time-resolved experiments on THz pulses. THz spectroscopy opens up novel opportunities in material characterization and information technology. Other projects deal with switching semiconductor devices at THz frequencies. The study of light-matter interactions at the nanoscale focuses on investigating the changes in these interactions in the vicinity of small metal nanoparticles using super-resolution microscopy techniques, and on designing materials or structures that interface with light in predetermined ways. Also explored are the new quantum properties that emerge when excitons and localized surface plasmon resonances become strongly coupled. Optical waveform shaping using spatial light modulators is applied to problems such as control of light propagation in biological tissues, complex photonic structures, plasmonic systems, and multimode fibers. Furthermore, the photon entanglement degradation is investigated.
Name of department: Physics, Applied Physics & Astronomy
Number of core optics/photonics students currently enrolled in a related program: 33
Number of students in optics/photonics related course work: 60
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: BS in Physics, BS in Applied Physics; MS in Physics; PhD in Physics
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering; Optics; Photonics; Biomedical optics
Admission deadlines: Undergraduate Application Due Dates: Early Decision 1 November 1; Early Decision II December 15; Regular Decision January 15; Graduate Applications Due Dates: Due Dates by Term of Study. Fall (August - December), January 18, Spring (January - May)
Year program was founded: 1990
Contact: Ingrid Wilke, Associate Professor
Email: wilkei@rpi.edu
Website: http://www.rpi.edu/dept/phys/physics.html
Mailing address: Rensselaer Polytechnic Institute, Department of Physics, Applied Physics & Astronomy, 110 8th Street, Troy NY 12180-3590 USA

Rochester Institute of Technology - SPIE Student Chapters OSA Student Chapter
Center for Imaging Science
Rochester, New York USA
The Chester F. Carlson Center for Imaging Science at RIT is a highly interdisciplinary University Research and Education Center, dedicated to pushing the frontiers of imaging in all its forms and uses. Through education leading to a BS, Masters, or PhD in the interdisciplinary field of Imaging Science, we produce the next generation of researchers who design and develop imaging systems to answer fundamental scientific questions, monitor our environment, help keep our nation secure, and aid medical researchers.
Name of department: Chester F. Carlson Center for Imaging Science
Number of core optics/photonics students currently enrolled in a related program: 150
Number of optics/photonics related courses offered in this program: 13
Optics/photonics related programs/degrees offered: Bachelor of Science in Imaging Science; Master of Science in Imaging Science; Ph. D. in Imaging Science
Admission deadlines: Applications for graduate admission are accepted on a rolling basis. However, for those applying for admission to the graduate program with financial assistance, the deadline for their application is January 15 for admission in the fall.
Year program was founded: 1986
Rochester Institute of Technology, SPIE. Rochester, New York USA

Microelectronic Engineering

Rochester, New York USA

Name of department: Electrical and Microelectronic Engineering

Number of core optics/photronics students currently enrolled in a related program: 150

Number of optics/photronics related courses offered in this program: 5

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Microelectronics; Microelectronic Engineering

Admission deadlines: Please refer to school Web site at https://www1.cuny.edu/admissions/index.html

The City College of New York

New York, New York USA

The City College of New York (CCNY) has a long tradition of academic excellence and is the flagship campus in the sciences and engineering in the City University of New York system; making it an appropriate site for a major national initiative in optical education and research. In recent years, CCNY has been among the top three schools in the nation whose graduates complete their studies toward a Ph.D. degree. CCNY has established a reputation for pioneering research in optics through the Institute for Ultrafast Spectroscopy and Lasers (IUSL), founded in 1982. In 2003, the NASA Center for Optical Sensing and Imaging (NASA COSI) and the DOD Center for Nanoscale Photonics was established at CCNY. Undergraduate and graduate students from the Grove School of Engineering and the Division of Science at CCNY are pursuing their research in various photonics labs at the IUSL and associated CCNY labs. The cooperation of CCNY’s departments of electrical engineering, earth and atmospheric sciences, civil engineering, chemical engineering, chemistry, biology and physics has enhanced the programs in optical engineering by combining the dimensions of engineering and physics applications. Ph.D./DM combinations in electrical engineering and physics are offered by the School of Engineering and the Division of Science, reflecting the strong interest and vigorous pace of activities in those areas at CCNY. Research topics include optical materials, laser design, ultrafast spectroscopy, nonlinear optics, optical communications, image processing, remote sensing, optical biopsy, optical computation, microstructures, laser medicine, photochemistry, optical mammography, optical tomography and quantum optics.

Name of department: Physics, Biology, Chemistry, Electrical Engineering and others

Number of core optics/photronics students currently enrolled in a related program: 287

Number of core optics/photronics related courses offered in this program: 100

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Admission deadlines: Please refer to school Web site at https://www.ccny.cuny.edu/

The City University of New York

New York, New York USA

The City University of New York (CUNY) is the nation’s largest urban public university with 23 institutions, including 11 senior colleges, 6 community colleges, an undergraduate honors college and a doctoral school. Undergraduate and graduate courses in optics are offered at many of the colleges. In recent years, new faculty members have been added to CUNY through a Photonics Initiative that is dedicated to keeping CUNY at the forefront of research in photonics. Towards that end, construction of a new science building at The City College of New York campus will start in summer 2008. Scheduled for completion in early 2012, the building will feature additional state-of-the-art lab spaces for various science departments. In addition, CCNY researchers, along with leading research faculty from The City University of New York system, will occupy new space in a future CCNY-sited building called the Advanced Science Research Center. Construction of the Advanced Science Research Center will start in summer 2008. This state-of-the-art building will facilitate the development of an integrated research network for CUNY students and faculty.

Name of department: Physics, Chemistry, Biology, Electrical Engineering at various campuses

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Academic and research specialties related to optics/photronics:

Supercontinuum generation, ultrafast lasers, ultrafast laser spectroscopy, nanophotonics, biophotonics, optical communication, nonlinear optics, biomedical optics and imaging, semiconductor micro and nano structures, laser system development, optical computation, remote sensing, optical imaging and signal processing, quantum optics, laser crystal growth, tunable solid-state lasers, terahertz radiation generation, imaging and spectroscopy, employee continuing education in photonics workshops/classes.

Admission deadlines: Please refer to http://www1.cuny.edu/admissions/index.html

Year program was founded: 1993

Contact: Prof. Robert R. Alfano, Distinguished Professor of Science and Engineering, Director, The City College of New York

Mailing address: The City College of New York, Dept of Physics, Rm MR-419, 160 Convent Ave, New York NY 10031 USA

University at Buffalo, State University of New York

Buffalo, New York USA

Research in Optics and Photonics relies on a synergy of fundamental physics, materials science, numerical modeling, and device applications. Research in this area has diverse applications, such as ultra-high resolution imaging, photovoltaics, sensing, quantum cryptography and secure communications.

Name of department: Electrical Engineering

Number of core optics/photronics students currently enrolled in a related program: 200

Number of core optics/photronics related courses offered in this program: 25

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Admission deadlines: Please refer to school Web site at https://www1.cuny.edu/admissions/index.html

Year program was founded: 1945

Contact: Katharine Bartelo, PhD, Graduate Program Administrator

Mailing address: 230 Davis Hall, Buffalo NY 14260 USA

University of Rochester

Rochester, New York USA

Name of department: The Institute of Optics

Number of core optics/photronics students currently enrolled in a related program: 287

Number of core optics/photronics related courses offered in this program: 331

Mailing address: The Institute of Optics, 200 East River Road, Rochester, New York 14623-5604 USA

University of Rochester

Rochester, New York USA

Name of department: The Institute of Optics

Number of core optics/photronics students currently enrolled in a related program: 287

Number of core optics/photronics related courses offered in this program: 331
UNDERGRADUATE/GRADUATE PROGRAMS

Number of optics/photonics related courses offered in this program: 59
Optics/photonics related programs/degrees offered: BSc in Optics; MSc; PhD in Optics

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: telecommunications; ultrashort pulses; nonlinear optics; quantum optics; optical engineering; laser science; biomedicine; optical lasers; laser physics; wave front sensing; physical optics; light-matter interactions; liquid crystal optics; optics on the nanometer scale; optical materials.

Admission deadlines: Application deadline for Fall: Jan. 20, each year
Year program was founded: 1929
Contact: Dr. Xi-Cheng Zhang, Director
Email: zhangxc@rochester.edu
Website: http://www.optics.rochester.edu/
Mailing address: Institute of Optics, University of Rochester, 275 Hutchison Road, Rochester NY 14627 USA

University of North Carolina at Charlotte
Charlotte, North Carolina USA

UNC Charlotte, with an enrollment of over 25,000 students, is located in Charlotte, NC. Visit http://optics.uncc.edu for a complete description of this program. Most incoming PhD students are supported on teaching assistantship for the first year, and after that, on research assistantship. Tuition costs quoted below are typical out-of-pocket fees per semester. Tuition is typically waived for PhD students. We admit students primarily in the fall term, for which applications should be in hand by first of March. We also admit students for the spring term, for which applications should be in hand by first of October.

Name of department: Physics and Optical Science
Number of core optics/photonics students currently enrolled in a related program: 55
Number of students in optics/photonics related course work: 70
Number of optics/photonics related courses offered in this program: 21
Optics/photonics related programs/degrees offered: BA and BS in Physics; MS in Applied Physics; MS in Optical Science and Engineering; PhD in Optical Science and Engineering

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Main research specialties: free-form optics; optical fab/test; metamaterials; photonics; bio-optics; lithographic/IR optics

Admission deadlines: We admit students primarily in the fall term, for which applications should be in hand by first of March.
Year program was founded: 2002
Contact: Mark Clayton, Graduate Administrator
Email: mclayton@uncc.edu
Website: http://optics.uncc.edu
Mailing address: UNC Charlotte, Dept. of Physics and Optical Science, 9201 University City Blvd., Charlotte NC 28223-0001 USA

NORTH CAROLINA

Duke University
Durham, North Carolina USA

The Fitzpatrick Institute for Photonics (FIP), formerly the Fitzpatrick Center for Photonics and Telecommunication Systems, Duke University is entering an important phase for leadership in photonics research. The Photonics for the New Era Initiative is an interdisciplinary, collaborative research and educational program that integrates Fitzpatrick’s strengths in photonics research and leverages the excellent resources at Duke in multidisciplinary research. The program focuses on cutting-edge research areas, such as biophotonics, nano/microsystems, nanophotonics, and quantum optics & information photonics, which are uniquely suited to address the challenges and fulfill the promises of the next technology revolution at the nexus of the nano-bio-info- opto convergence.

Name of department: The Fitzpatrick Institute for Photonics
Number of core optics/photonics students currently enrolled in a related program: 80
Number of students in optics/photonics related course work: 20
Number of optics/photonics related courses offered in this program: 17
Optics/photonics related programs/degrees offered: Certification: A certificate program in photonics exists for both the MS and PhD degrees. Conventional graduate and undergraduate degrees in Science and Engineering with certificates recognizing a specialization in Photonics subjects. Conventional graduate and undergraduate degrees in Science and Engineering, along with a Masters in Engineering in Photonics and Optical Sciences. Five research areas: Biophotonics, Nanophotonics, Quantum Optics, Optoelectronics, Networks, Optical Sensor, Networks

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: biophotonics; nanophotonics; nano/micro systems; quantum optics and information photonics; photonic materials; advanced photonic systems; systems modeling, theory and data treatment; novel spectroscopies.

Admission deadlines: Deadline information is found at http://www.gradschool.duke.edu/. For current expense details: http://www.gradschool.duke.edu/financial_support/student_expenses.html and MEng in Photonics. Deadlines can be found at: http://meng.pratt.duke.edu/apply/deadlines
Year program was founded: 2000
Contact: Adam Wax, Associate Director of Education
Email: awax@duke.edu
Website: http://www.fitzpatrick.duke.edu
Mailing address: Duke University, The Fitzpatrick Institute for Photonics, Box 90271, Durham NC 27708 USA

NORTH DAKOTA

North Dakota State University
Fargo, North Dakota USA

The Department of Electrical and Computer Engineering and the Department of Physics have a joint program in optical science and engineering. Students customarily take credits in modern and optical physics and optical engineering. This program creates opportunities for ECE and Physics students to obtain optical engineering positions in industry while also equipping them for graduate studies in this area. The academic programs enhance interdisciplinary work between the departments. One example is the performance of undergraduate capstone projects that are joint activities of Physics and the ECE Department. • The ECE at NDSU also offers M.S. and Ph.D. programs in Biomedical Engineering (interdisciplinary) that are also related to the field of optics.

Name of department: Physics, Electrical and Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 5
Number of students in optics/photonics related course work: 20
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: B.S. in ECE, Optical Engineering Option or B.S. in Physics, Optical Science and Engineering Option. M.S. in ECE or M.S. in Physics. Ph.D. in ECE or Ph.D. in Physics

Type/Description of disciplines/program tracks offered: Physics; Electrical engineering

Academic and research specialties related to optics/photonics: fiber optics, theory, fiber lasers, theory of optical communications systems design, biophotonics

Accreditation Program: Electromagnetics/Optics within ECE
Accreditation Organization: Engineering Accreditation Commission of ABET since Oct. 1, 1948
Application Deadline: March 1 for fall, September 1 for spring.
Year program was founded: 2000

Contact: Michael Escuti, Dr
Email: mjescuti@ncsu.edu
Website: http://www.ece.ncsu.edu/
Mailing address: NC State University, Electrical & Computer Engineering, Campus Box 7914, Raleigh NC 27695-7914 USA

North Carolina State University
Raleigh, North Carolina USA

Name of department: Electrical & Computer Engineering
Number of core optics/photonics students currently enrolled in a related program: 20
Number of students in optics/photonics related course work: 40
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Fiber optics
**Ohio**

**Bowling Green State University - Center for Photochemical Sciences**

Research in the Center focuses on a wide range of investigations into the interaction of light with matter. Graduate students from a variety of different undergraduate backgrounds work in a strongly collaborative setting on programs originating in one of a number of single research areas as defined by the faculty (see above). The core curriculum, following initial placement and qualification, includes courses in organic mechanisms and theory, quantum chemistry and spectroscopy, photophysics, kinetics and dynamics and photochemical reaction theory. Elective courses in various microscopes, surface science, x-ray crystallography, photobiochemistry, and other areas serve the needs of individual graduate students.

**Name of department:** Center for Photochemical Sciences

**Number of core optics/photonics students currently enrolled in a related program:** 60

**Number of students in optics/photonics related course work:** 60

**Number of optics/photonics related courses offered in this program:** 3

**Optics/photonics related programs/degrees offered:** M.S. in Chemistry, Photochemical Sciences Doctor of Philosophy (Ph. D.)

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Technology; Optics; Photonics

**Academic and research specialties related to optics/photonics:** spectroscopy, surface science, optoelectronics, photopolymers, imaging science, electron transfer processes, combinatorial science, supramolecular chemistry, fluorescence microscopy, photonic devices and materials, nanophotonic devices.

**Year program was founded:** 1987

**Contact:** Nora R. Cassidy, Graduate Program Coordinator

**Website:** http://www.bgsu.edu/departments/photochem

**Mailing address:** Center for Photochemical Sciences, Bowling Green State University, 132 Overman Hall, Bowling Green OH 43403 USA

**Kent State University**

The graduate Chemical Physics Interdisciplinary Program at KSU offers a unique program of study focused on liquid crystals which leads to an M.S. or Ph.D. degree in chemical physics. Research areas include: Physical properties of liquid crystals/*; Optoelectronics (liquid crystal displays/ applications/*; Liquid crystal synthesis/ molecular design/*; Lyotropic liquid crystals/membranes/*; General Chemical Physics. Students participate in basic and applied research conducted by program faculty at LCI, a center for basic and applied liquid crystal research. The LCI melds basic studies of liquid crystals with applied science. This approach has resulted in technological advances and new applications.

**Name of department:** Chemical Physics Interdisciplinary Program

**Number of core optics/photonics students currently enrolled in a related program:** 40

**Number of students in optics/photonics related course work:** 40

**Number of optics/photonics related courses offered in this program:** 10

**Optics/photonics related programs/degrees offered:** Master of Science Degree in Liquid Crystal Engineering. The Liquid Crystal Engineering Concentration offers an intensive one to two-year curriculum leading to an M.S. degree without thesis. It focuses on practical learning by combining both lecture and hands-on laboratory coursework with equal emphasis, providing students with the opportunity to learn: • basic sciences of liquid crystals and electro-optics, • modeling and simulation, • electronic and optical design, • fabrication and testing of displays, electro-optic devices, sensing devices and applied systems in the advanced facilities of the LCI. For more details, please visit: http://www.icinet.kent.edu/cip/index.php?content=eng&title=LiquidCrystalEngineering

**Type/Description of disciplines/program tracks offered:** Physics; Electrical engineering; Optics; Photonics

**Academic and research specialties related to optics/photonics:** Beam steering devices; LCDs: physical mechanisms, electro-optical properties, modeling/optimization; page-size zero power displays; optical compensators and polarizers; diffractive devices; polymer-dispersed and polymer-stabilized LCs, advanced electronic shutters, plastic-lens LCDs, IR devices for optical beam steering and telecommunications, SmC* devices, fluorescence confocal microscopy, photonic band gap materials, lasing in custom liquid crystalline materials; liquid crystal-based biosensors; liquid crystal colloids; nanobiophotonics, nanophotonics, micro/nanofluidics, nanophotonics.

**Year program was founded:** 1994

**Contact:** Antal Jakli, Professor of Chemical Physics, Graduate Coordinator

**Email:** ajakli@kent.edu

**Website:** http://www.kent.edu/cas/cpdp/

**Mailing address:** Kent State University, Liquid Crystal Institute, PO Box 5190, Kent OH 44242 USA

**Ohio State University**

**Columbus, Ohio USA**

The Department of Electrical and Computer Engineering has no formally named program in optics. Optics is considered interdisciplinary between electromagnetics and semiconductors; a student going for a BSEE, MS, or Ph.D. can have emphasis in either or both. Undergraduates may take technical electives in fibers, lasers, integrated optics, nonlinear optics, and classical optics, optoelectronic materials, photonics laboratory, medical imaging. Graduates may take all these plus machine vision, high-speed electronic devices, advanced topics, solar cells. See web page for more details. Ohio State is big but friendly and there are many diverse departments for an academically rich environment.

**Name of department:** Electrical Engineering

**Number of core optics/photonics students currently enrolled in a related program:** 20

**Number of students in optics/photonics related course work:** 100

**Number of optics/photonics related courses offered in this program:** 11

**Optics/photonics related programs/degrees offered:** ECE with courses in optics; MSECE; Ph.D Electrical and Computer Engineering

**Type/Description of disciplines/program tracks offered:** Photonics

**Academic and research specialties related to optics/photonics:** RF photonics, optical interconnections, coherence, bionanophotonics,MEMS/ NEMS, polymer optical devices, Quantum dots, OECs, photovoltaics, wave imaging, semiconductor optical devices and materials, fiber optics, optical communication, medical imaging, computer vision, biomedical optics.

**Admission deadlines:** Domestic-August 15 every year for fall quarter; International-July 1 for fall quarter; Fellowship November 28, for fall quarter, for other quarters see http://gradadmissions.osu.edu/deadlines. html

**Year program was founded:** 1900

**Contact:** Prof. Ronald M. Reano, Associate Professor

**Email:** reano.1@osu.edu

**Website:** http://www.ece.osu.edu/

**Mailing address:** Ohio State Univ., 205 Dreeve Lab, 2015 Neil Ave , Columbus OH 43210 USA

**University of Dayton**

**Dayton, Ohio USA**

The Electro-Optics Graduate Studies at the University of Dayton confers two degrees: M.S. in Electro-Optics and Ph.D. in Electro-Optics. The M.S. curriculum consists of six core courses, three lab courses and a technical elective. We emphasize a hands-on practical approach to optics. An M.S. thesis based on research is normally required for the degree. The Ph.D. consists of the core courses plus at least 4 advanced level optics courses and 2 graduate math courses. A dissertation based on research findings is required. Our program blends practical applications with a firm theoretical foundation in optics.

**Name of department:** Electro-Optics and Photonics

**Number of core optics/photonics students currently enrolled in a related program:** 60

**Number of students in optics/photonics related course work:** 65

**Number of optics/photonics related courses offered in this program:** 31

**Optics/photonics related programs/degrees offered:** Master of Science (M.S) in Electro-Optics. Doctor of Philosophy (PhD) in Electro-Optics

**Type/Description of disciplines/program tracks offered:** Optical engineering
Academic and research specialties related to optics/photonicst: Nano-
photonicst, ellipsometry & polarimetry, plasmonics, nano-fabrication,
photodetectors and focal plane arrays, metamaterials, biophotonics,
terahertz generation, free space optical communications, adaptive
optics, wavefront sensing, imaging through turbulent atmosphere,
photorefractivest, digital holographic interferometry & microscopy,
parametric processes, optical/digital image processing, fiber lasers
and fiber beam control, pattern/target recognition, beam steering
agility, optical systems design, quantum optics, nonlinear optics,
electro-opticst systems, optoelectronic materials, radar, computational
emagnetism, intense femtosecond pulse propagation.

Admission deadlines: Open enrollment
Year program was founded: 1983
Contact: Dr. Partha P. Banerjee, Director
Email: pbabanerjeel@udayton.edu
Website: http://www.udayton.edu/engineering/electrooptics_grad/index.
php
Mailing address: Univ. of Dayton, Electro-Optics Program, 300 College
Park, , Dayton OH 45469-0245 USA

Type/Description of disciplines/program tracks offered: Physics
Contact: Dr. Charles Hughes, Assistant Department Chair
Email: chughes@uco.edu
Website: http://www.uco.edu/cms/engineering/index.asp
Mailing address: Univ. of Central Oklahoma, Dept. of Physics & Engineering,
100 N. University Dr, Edmond OK 73034 USA

OREGON

Oregon Institute of Technology
Wilsonville, Oregon USA
The Optical Engineering is a six course program designed for junior and
senior level students. All courses have three hours of lecture and three
hours of laboratory work each week. Classes are scheduled for one
afternoon and evening a week to accommodate the needs of working
professionals. The classes cover geometric optics, radiometry and optical
detection, physical optics, lasers, fiber optics, and optical metrology.
Name of department: Electrical Engineering and Renewable Energy
Number of core optics/photonicst students currently enrolled in a related
program: 10
Number of students in optics/photonicst related course work: 10
Number of optics/photonicst related courses offered in this program: 6
Optics/photonicst related programs/degrees offered: Dual Major in Optical
Engineering. Master’s of Science in Engineering with an emphasis in
Optical Engineering
Type/Description of disciplines/program tracks offered: Physics; Optical
engineering; Electrical engineering; Optics; Photonics; Fiber optics
Academic and research specialties related to optics/photonicst: Fiber
optics and fiber optics systems, low and high power laser systems
and laser physics, optical detection, optical testing, Fourier optics,
and holography.
Admission deadlines: March 15 (to apply for financial assistance)
Year program was founded: 2014
Contact: Scott Prahl, Program Director of Optical Engineering
Email: scott.prahl@oit.edu
Website: http://www.oit.edu/academics/degrees/optical-engineering
Mailing address: Oregon Institute of Technology, Electrical Engineering and
Renewable Energy, 27500 SW Parkway Ave, Wilsonville OR 97070 USA

Oregon State University
Corvallis, Oregon USA
Optics at Oregon State University is an interdisciplinary program with
courses in Physics, Chemistry, and Electrical Engineering covering
physical optics, optical electronics, guided wave optics, nonlinear optics,
and various types of optical spectroscopy. Students may concentrate in
any of the three areas while obtaining their optics background.
Name of department: School of Electrical Engineering and Computer
Science; Departments of Physics and Chemistry
Number of core optics/photonicst students currently enrolled in a related
program: 20
Number of students in optics/photonicst related course work: 60
Number of optics/photonicst related courses offered in this program: 8
Optics/photonicst related programs/degrees offered: BS in ECE, Physics,
or Chemistry; MS in ECE, Physics, or Chemistry; PhD in ECE, Physics, or
Chemistry
Type/Description of disciplines/program tracks offered: Physics; Electrical
engineering
Academic and research specialties related to optics/photonicst: Optical
materials and devices; display devices; nonlinear optical materials
and devices; transparent electronics; fiber optic sensors; optical biosensors;
optoelectronic devices, and applications, spectroscopy of surfaces
and atoms, THz spectroscopy, optical tweezers, optical properties of
biological materials.
Admission deadlines: February 1 for Fall admission for scholarship
consideration
Year program was founded: 1975
Contact: Dr. Alan Wang, Assistant Professor
Email: wang@eecs.oregonstate.edu
Website: http://eecs.oregonstate.edu
Mailing address: Oregon State Univ., School of Electrical Engineering and
Computer Science, Room 1148, Kelley Engineering Center, Corvallis OR
97331 USA
The Oregon Center for Optical Technologies is a multi-institutional initiative based at Lehigh University, a charter to advance research and applications of optical and optoelectronic technologies. Currently the three primary research focus areas are Optoelectronics, All-Optical Functionalities, and Biophotonics. Please visit www.lehigh.edu/optics/.

Name of department: Oregon Center for Optical, Molecular, and Quantum Science

Number of core optics/photonics students currently enrolled in a related program: 46
Number of students in optics/photonics related course work: 46
Number of optics/photonics related courses offered in this program: 9
Optics/photonics related programs/degrees offered: Masters and Doctoral programs available.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Fiber optics; Physical Chemistry
Admission deadlines: January 15, 2021; Physics: January 5, 2021 - Chemistry
Year program was founded: 1997
Contact: Jorjie Arden, Research and Outreach Coordinator
Email: omq@uoregon.edu
Website: http://omq.uoregon.edu/
Mailing address: Oregon Center for Optical, Molecular and Quantum Science, 1274 University of Oregon, Eugene OR 97403-1274 USA

Pennsylvania State University
University Park, Pennsylvania USA

Faculties in EE conduct research and education in the the following broad fields: nano-photonics, bio-photonics, signal processing, nonlinear optics, electro-optic devices, liquid crystals and nonlinear optical materials, lasers, optical computing, neural networks, optical communications and remote sensing.

Name of department: Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 13
Optics/photonics related programs/degrees offered: Certification: Laser Technologies - offered in the college of engineering. BS in Electrical Engineering; MS in Electrical Engineering; PhD in Electrical Engineering
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical Engineering; Optics; Photonics; Biomedical optics; Fiber optics

Academic and research specialties related to optics/photonics: Nano-photonics, optoelectronics, nonlinear optics, electro-optics, fiber optics, liquid crystals and nonlinear optical materials, bio-photonics, lasers, display and light emitting devices, optical communications and remote sensing.

Accreditation Organization: ABET
Year program was founded: 1985
Contact: Prof. Iam-Choon Khoo, William E Leonhard Professor of Electrical Engineering
Email: ick1@psu.edu
Website: http://www.ece.psu.edu/index.aspx
Mailing address: Pennsylvania State University, Electrical Engineering Dept., 216 Electrical Engineering East, University Park PA 16802 USA

TENNESSEE

Fisk University
Nashville, Tennessee USA

Name of department: Physics
Number of core optics/photonics students currently enrolled in a related program: 24
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: BS in Physics, concentration in photonics. MA in Physics, concentration in photonics

Academic and research specialties related to optics/photonics: Photonic materials
Year program was founded: 1992
Contact: Dr. Steven Morgan, Director of Optical Materials Resources
Email: smorgan@fisk.edu
Website: http://www.fisk.edu
Mailing address: Fisk Univ., Ctr. for Photonic Materials & Devices, Dept. of Physics, PO Box 15, Nashville TN 37208 USA

Vanderbilt University
Nashville, Tennessee USA

The optics and photonics program at Vanderbilt University offers undergraduate and graduate degrees in various science and engineering disciplines with a focus in biophysics, biophotonics, optics and imaging.

Name of department: Biomedical Engineering
Number of core optics/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 15
Optics/photonics related programs/degrees offered: BE Degrees are awarded in Biomedical Engineering with curricular focus in Biomedical Optics. Other degrees include BE in Electrical Engineering, Chemical and Biomolecular Engineering and Mechanical Engineering (with a course/research focus in optics), BS in Physics (with a focus in Biophysics), chemistry. MS & ME Degrees are awarded in Biomedical Engineering, Electrical Engineering, Chemical and Biomolecular Engineering, Mechanical Engineering, Physics and chemistry with a research focus in optics, photonics and related fields. PhD Degrees are awarded in Biomedical Engineering, Electrical Engineering, Chemical and Biomolecular Engineering, Mechanical Engineering, chemistry and Physics with a research focus in optics, photonics and related fields.
The basis of the extremely successful research of the quantum optics group has established long-term research collaborations with universities. Most recent examples of the highly productive synergism are lasing without inversion, slow light and non-linear pectrosopy in atomic vapors, as well as experiments on the foundations of quantum mechanics.

Type/Description of disciplines/program tracks offered: Physics, Electrical engineering, Biomedical optics, Mechanical Engineering, Chemical and Biomolecular Engineering, Chemistry

Accreditation Program: The Engineering programs are ABET accredited

Accreditation Organization: ABET

Admission deadlines: Please refer to the University website for current deadlines and application information.

Year program was founded: 1996

Contact: Jean Alley, Program Coordinator
Email: jean.alley@vanderbilt.edu
Website: http://www.bme.vanderbilt.edu/bmeoptics/
Mailing address: Vanderbilt Univ, Biomedical Engineering Dept., Box 351631, Station B, Nashville TN 37235 USA

Optics and Photonics Education Directory 2020/2021
UNDERGRADUATE/GRADUATE PROGRAMS

Accreditation Program: The BS in EE program is accredited by ABET.
Name of department: Physics and Engineering
Number of core optics/photons students currently enrolled in a related program: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30

Number of students in optics/photons related course work: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30

Number of students in optics/photons related course work: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30

Number of students in optics/photons related course work: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30

Number of students in optics/photons related course work: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30

Number of students in optics/photons related course work: 60
Number of optics/photons related courses offered in this program: 6
Optics/photons related programs/degrees offered: BS through Chemistry, Physics, and Engineering Departments. MS through Chemistry, Physics, and Engineering Departments. PhD through Chemistry, Physics, and Engineering Departments
Type/Description of disciplines/program tracks offered: Physics; Optical engineering
Academic and research specialties related to optics/photons:

Admission deadlines: Deadline for graduate school application is January 15th; http://gias.virginia.edu/admission
Year program was founded: 1987
Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photons students currently enrolled in a related program: 100
Number of students in optics/photons related course work: 600
Number of optics/photons related courses offered in this program: 30
Optics/photonics related programs/degrees offered: BS degree conferred through individual departments. MS degree conferred through individual departments. PhD degree conferred through individual departments.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics.

Admission deadlines: Varies by department. Student should check the website for the relevant department.

Contact: Lih Y. Lin, Professor
Email: lylin@uw.edu
Mailing address: University of Washington, Dept. of Electrical Engineering, 185 Stevens Way, Seattle WA 98195-2500 USA

Washington State University
Pullman, Washington USA

The Physics and Astronomy Department at WSU offers a strong program in applied physics and astrophysics. Optical characterization is a central theme that connects a broad range of research areas that includes shock dynamics, ultrafast laser physics, surface physics, nonlinear optics, polymer physics, light scattering in bubbles and droplets, time-resolved optical spectroscopy, nonlinear optical devices and fiber optics, acoustics, electronic structure of solids and surfaces, and molecular spectroscopy. Both a thesis and nonthesis masters program are available.

Name of department: Physics and Astronomy

Number of core optics/photonics students currently enrolled in a related program: 120
Number of students in optics/photonics related course work: 22

Number of optics/photonics related programs/degrees offered: BS in Physics; M.S. in Physics; Ph.D. in Physics

Type/Description of disciplines/program tracks offered: Physics; Astronomy

Academic and research specialties related to optics/photonics: Optics; dynamics and spectroscopy of gases, liquids, solids, polymers, reacting systems and molecular clusters; heterostructures; quantum wells; ultrafast optics; nonlinearoptics in polymeric systems; defects in wide bandgap semiconductors; high-Tc superconductivity, excited-state dynamics; light scattering and Fourier optics; acoustics; wave propagation in materials under high pressure.

Admission deadlines: Priority application deadline for Fall: January 10 (Graduate); January 31 (Undergraduate)

Year program was founded: 1919

Contact: Robin Stratton, Administrative Manager
Email: physics.finance@wsu.edu
Website: http://www.physics.wsu.edu
Mailing address: Washington State University, Dept. of Physics and Astronomy, PO Box 642814, Pullman WA 99164-2814 USA

WEST VIRGINIA

West Virginia University
Morgantown, West Virginia USA

Students major in their discipline of choice and select elective course and research projects consistent with their chosen thrust area related to photonics and current faculty research programs. Primary research areas of faculty in the PMT group include photonic MEMS and MEMS optical monitoring and control, integrated biosensing devices, GaN and multifunctional materials, photonic nanostructures, and optical crystal defect characterization.

Name of department: Photonic and Microelectronic Technologies Group

Number of core optics/photonics students currently enrolled in a related program: 20
Number of optics/photonics related courses offered in this program: 6

Optics/photonics related programs/degrees offered: Bachelors in Electrical Engineering, Biometrics; Masters and doctoral degrees in Electrical Engineering

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Technology; Optics; Photonics; Biometrics

Academic and research specialties related to optics/photonics: The Photonic and Microelectronic Technologies (PMT) Research Working Group related degrees in electrical engineering and biometrics. Its research is focused on new innovations for solid state lighting and molecular biometrics sensor applications.

Admission deadlines: Rolling Admission.

Year program was founded: 1994

Contact: Prof. Dimitris Korakakis, Associate Professor of Electrical Engineering
Email: dimitris.korakakis@mail.wvu.edu
Website: http://www.lcsee.cemr.wvu.edu/
Mailing address: West Virginia Univ., Dept. of CSEE, PO Box 6109, Morgantown WV 26506-6109 USA
## ARGENTINA
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- Universidad de Buenos Aires ............... 10
- Universidad Nacional de Rosario .......... 10

## ARMENIA
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## AUSTRALIA
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## BELGIUM
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## BRAZIL
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