2020/21 Education Directory
Global Directory of Programs in Optics and Photonics

Optics and Photonics Education

www.opticseducation.org
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. Scholarship applications are judged on their own merit based on the experience and education level of the individual student. High school (pre-university/secondary school) and 1st/2nd year post-secondary, undergraduate, and graduate students are encouraged to apply and will be judged relative to other applicants with similar educational backgrounds.

Gehrig Carlse, York University (Canada), was awarded the Laser Technology, Engineering and Applications Scholarship. This scholarship is awarded in recognition of the student's scholarly achievement in Laser Technology, Engineering, or Applications.

Jonathan Pinnell, Univ. of the Witwatersrand, Johannesburg (South Africa), was awarded the SPIE D.J. Lovell Scholarship. This is the Society's largest, most prestigious scholarship and sponsored by SPIE.

Daniel Louie, The University of British Columbia (Canada), was awarded the John Kiel Scholarship. This is the Society's second largest scholarship and it is sponsored by SPIE.

The Laser Technology, Engineering and Applications Scholarship was awarded to Gehrig Carlse, York University (Canada). This scholarship is awarded in recognition of the student's scholarly achievement in Laser Technology, Engineering, or Applications.

David Lippman, The Institute of Optics, Univ. of Rochester (United States), was awarded the Optical Design and Engineering Scholarship. This Scholarship was established in honor of Bill Price and Warren Smith, both well-respected members of SPIE's technical community. This scholarship is awarded to a full-time student in the field of optical design and engineering.

Yonghuan David Ren, University of California, Berkeley (United States), was awarded the BACUS Scholarship. This scholarship is awarded to a student in the field of microlithography with an emphasis on optical tooling and/or semiconductor manufacturing technologies. This scholarship is sponsored by BACUS, SPIE's Photomask International Technical Group.

Deesha Shah, Purdue University (United States), was awarded the Teddi Laurin Scholarship. Photonics Media partners with SPIE to fund the Teddi Laurin Scholarship to raise awareness of optics and photonics and to foster growth and success in the photonics industry by supporting students involved in photonics. This scholarship is in memory of Laurin Publishing and Photonics Media founder Teddi Laurin.

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For more information on SPIE's scholarship program, a complete list of 2019 scholarship winners, and the criteria used by the SPIE Scholarship Committee in selecting recipients, visit spie.org/scholarships.

THE MICHAEL KIDGER MEMORIAL SCHOLARSHIP

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.

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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.

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get-involved@spie.org
CONSIDER A FUTURE IN OPTICS AND PHOTONICS.

Optics and Photonics Education: Global Directory of Programs in Optics and Photonics
Managing Editor: Pascale Barnett
Contributors: Melissa Valum and Curtis Burrill
Design and Typesetting: Linda DeLano

Optics and Photonics Education: Global Directory of Programs in Optics and Photonics is a comprehensive guide to optics and photonics programs offered at institutions around the world. The directory is published by SPIE and The Optical Society (OSA).

The listings are intended to serve as a resource guide for the optics and photonics community. The information in the listings was submitted in response to an annual request made by SPIE and OSA for information to be included in this publication. Information was taken from the website, www.opticseducation.org. Listings for individual optics and photonics programs in this directory reflect the opinions of their authors; inclusion does not necessarily constitute endorsement by SPIE or OSA, and SPIE and OSA take no responsibility for their accuracy.

Contributions of information and photographs for inclusion in the directory are welcome.

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Email: cburrill@osa.org

About SPIE
SPIE is the international society for optics and photonics, an educational not-for-profit organization founded in 1955 to advance light based science and technology. The Society serves more than 255,000 constituents from 183 countries, offering conferences and their published proceedings, continuing education, books, journals, and the SPIE Digital Library in support of interdisciplinary information exchange, professional networking, and patent precedent. In 2019, SPIE provided more than $5 million in community support including scholarships and awards, outreach and advocacy programs, travel grants, public policy, and educational resources.

About The Optical Society
Founded in 1916, The Optical Society (OSA) is the leading professional organization for scientists, engineers, students and entrepreneurs who fuel discoveries, shape real-life applications and accelerate achievements in the science of light. Through world-renowned publications, meetings and membership initiatives, OSA provides quality research, inspired interactions and dedicated resources for its extensive global network of optics and photonics experts. For more information, visit osa.org/100.

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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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UCF | CREOL, The College of Optics and Photonics
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): Photons Engineering Technology Diploma (3 year); Photons 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 Irvine
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

Front Range Community College
Longmont, Colorado USA

Name of department: Optics Technology
Number of core optics/photonics students currently enrolled in a related program: 18
Number of students in optics/photonics related course work: 18
Number of optics/photonics related courses offered in this program: 8
Optics/photonics related programs/degrees offered: Certification: 30-credit optics Technology certificate
Type/Description of disciplines/program tracks offered: Optics
Admission deadlines: 8/17/2020
Year program was founded: 2017
Contact: George Newman, Adv Mfg Program Director
Email: george.newman@frontrange.edu
Website: https://www frontrange.edu/programs-and-courses/a-z-program-list/optics-technology
Mailing address: 1351 S. Sunset Street, Longmont CO 80501 USA

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 produces 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 photonic related company. After completing this program you can also transfer all the credit towards an AS degree in Electronics Engineering Technology.

MAJOR FIELD REQUIRED COURSES – 12 credits

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<td>3</td>
</tr>
<tr>
<td>EST 2215 Geometrical Optics</td>
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</tr>
</tbody>
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Associate Degree(s): Electrical 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

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

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

Photons/photonics related programs/degrees offered: Certification:

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

Year program was founded: 1976

Contact: Dr. Randy Norton, Assistant Professor

Email: nortrand@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

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):
AA - Associate in Applied Science in Photonics, laser or fiber optic option (60)

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

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):
AA - Associate in Applied Science in Photonics, laser or fiber optic option (60)

Type/Description of disciplines/program tracks offered: Physics; 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
ASSOCIATE PROGRAMS

NEW YORK

Monroe Community College
Rochester, New York USA

Name of department: Optical Systems Technology
Number of core optics/photonics students currently enrolled in a related program: 70
Number of students in optics/photonics related course work: 160
Number of optics/photonics related courses offered in this program: 12
Optics/photonics 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/photonics: 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: Mr. Gary Beasley, Lead Instructor
Email: gbbeasley@ccc.edu
Website: https://www.monroecc.edu

Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 5
Optics/photonics 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

Admission deadlines: 8/17/2020 Registration Ends
Year program was founded: 1986
Contact: Mr. Gary Beasley, Lead Instructor
Email: gbbeasley@ccc.edu
Website: http://www.cccc.edu

Number of core optics/photonics students currently enrolled in a related program: 4
Number of students in optics/photonics related course work: 4
Optics/photonics related programs/degrees offered: Certification: New Horizons: Puerto Rico Lasers and Photonics Career Pathways; 1-year Photonics 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.uagm.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/photonics students currently enrolled in a related program: 6
Number of students in optics/photonics related course work: 6
Optics/photonics 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 electronic engineering technology.

Name of department: Laser and Photonics Technology
Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: Certification: Laser and Photonics Technology; Associate degree(s): Certificate of Proficiency; Associate degree(s)

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

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

Certification: New

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

Name of department: Optical Systems Technology
Number of core optics/photonics students currently enrolled in a related program: 70
Number of students in optics/photonics related course work: 160
Number of optics/photonics related courses offered in this program: 12
Optics/photonics 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/photonics: 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: Mr. Gary Beasley, Lead Instructor
Email: gbbeasley@ccc.edu
Website: http://www.cccc.edu

Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 40
Number of optics/photonics related courses offered in this program: 5
Optics/photonics 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

Admission deadlines: 8/17/2020 Registration Ends
Year program was founded: 1986
Contact: Mr. Gary Beasley, Lead Instructor
Email: gbbeasley@ccc.edu
Website: http://www.cccc.edu

Puerto Rico
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, Photophysical 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: ecолькоibo@herrera.unt.edu.ar
Website: http://www1.herrera.unt.edu.ar/facety/dilly/
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 Ingeniería, UBA) offers a professional-oriented postgraduate 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.

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)

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: Dpto de Física, Facultad de Ingeniería, Paseo Colon 850, Buenos Aires 1063 Argentina

Yerevan State University
Yerevan, Armenia

Name of department: Quantum Electronics
Number of core optics/photonics students currently enrolled in a related program: 8
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: MS in Optics 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, communication technology, optical networks

Accreditation Program: PhD
Accreditation Organization: Ministry of high education
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

National Polytechnic University of Armenia
Yerevan, Armenia

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: 40
Number of optics/photonics related courses offered in this program: 10
Type/Description of disciplines/program tracks offered: Bachelor's, masters and doctoral programs available.

Accademic and research specialties related to optics/photonics: lasers, fiber optics, guided optics, optoelectronics, nonlinear crystals

Year program was founded: 1995
Contact: Khachatur Nerkarayan, 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: 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

Contact: Prof. Guillermo H. Kaufmann, Head of Optical Metrology Lab.
Email: kaufmann@ifir-conicet.gov.ar
Website: http://www.ifir-conicet.gov.ar/optics/gkh.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/photonsics:
laser cooling and trapping of atoms, optical materials, photonics, optoelectronic devices, quantum computing, optical solitons, theoretical modeling of nonlinear optical phenomena, nonlinear optics, modern information transmission systems, waveguides and integrated optics, all-optical switching devices, nanophotonics and phononic 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
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/photonsics students currently enrolled in a related program: 10
Number of students in optics/photonsics related course work: 30
Number of optics/photonsics related courses offered in this program: 5

Optics/photonsics related programs/degrees offered: Bachelor - Science (Physics), Masters of Research - research and coursework masters degree (2 years) - preparation for PhD study. PhD by research (3-4 years) with limited coursework. Scholarships available for excellent candidates.

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

Academic and research specialties related to optics/photonsics: 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-phonons, bio-phonons, nano-optics and nanophotonics, 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: brhall@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/photonsics students currently enrolled in a related program: 25
Number of students in optics/photonsics related course work: 20
Optics/photonsics 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 Academic and research specialties related to optics/photonsics: Physical optics and photonics, imaging, atom optics, x-ray optics, x-ray spectroscopy, measurement of atomic form factors, tests of QED, coherence, plasmonics, metamaterials, metasurfaces, nano- and micro-optics, plasmonics, nanowires, optical trapping

Accreditation Organization: Australian Institute of Physics; Australian Government Tertiary Education Quality and Standards Agency
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/photonsics students currently enrolled in a related program: 20
Number of students in optics/photonsics related course work: 50
Number of optics/photonsics related courses offered in this program: 8
Optics/photonsics 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/photonsics: Nanophotonics, nonlinear optics, photonic engineering; stimulated Brillouin scattering; astrophotonics; polymer fibers; 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/ips/
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 Anne% Dowd
Email: annette.dowd@uts.edu.au
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

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, microophotonics 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

Admission deadlines: http://www.vub.ac.be/en/study/european-master-of-
science-in-photonics/admission-and-registration
Year program was founded: 2004
Contact: Prof. Heidi Ottevaere, Programme Director
Email: Heidi.Ottevaere@vub.be
Website: http://www.b-phot.org
Mailing address: Vrije Univ. Brussel, Applied Physics & Photonics Dept.,
Pleinlaan 2, Brussels B-1050 Belgium

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/pgcmimat/
Microelectronics: http://www.inf.ufrgs.br/pingmicro/
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

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
photonics 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 photonics 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) & ENAE (European Network for Accreditation of
Engineering Education)
Year program was founded: 2004
Contact: Bert Coryn, Photonics Programme Officer
Email: bert.coryn@ugent.be

BRAZIL
Academic and research specialties related to optics/photronics: 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: 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

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. The undergraduate B.Eng. Engineering Physics program is accredited by the Canadian Engineering Accreditation Board (CEAB). Our faculty and students are involved in pushing the envelope of new technologies to address grand challenges such as energy supply, information and communications technology, and human health. Photonics Engineering is one of the four specialties/streams offered in the program. One of the strengths of the McMaster Photonics Engineering program is that it is broadly based and prepares its graduates to pursue a wide range of career paths. All students in the program obtain a background in electrical science, engineering materials, classical and quantum mechanics, thermodynamics, electronics, data acquisition and handling, mathematical physics and numerical analysis, fundamentals of physical optics, optical communications, electro-optics, and optical instrumentation.

Name of department: Engineering Physics
Number of core optics/photons students currently enrolled in a related program: 150
Number of optics/photos related courses offered in this program: 18

Canada

McMaster University
Hamilton, Ontario Canada

Engineering Physics at McMaster is an interdisciplinary engineering program that studies advanced materials, devices, and systems based on our fundamental understanding of physics. The undergraduate B.Eng. Engineering Physics program is accredited by the Canadian Engineering Accreditation Board (CEAB). Our faculty and students are involved in pushing the envelope of new technologies to address grand challenges such as energy supply, information and communications technology, and human health. Photonics Engineering is one of the four specialties/streams offered in the program. One of the strengths of the McMaster Photonics Engineering program is that it is broadly based and prepares its graduates to pursue a wide range of career paths. All students in the program obtain a background in electrical science, engineering materials, classical and quantum mechanics, thermodynamics, electronics, data acquisition and handling, mathematical physics and numerical analysis, fundamentals of physical optics, optical communications, electro-optics, and optical instrumentation.

Name of department: Engineering Physics
Number of core optics/photons students currently enrolled in a related program: 40
Number of students in optics/photons related course work: 100
Number of opt/phot 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/photons: Nanophotonics, optical instrumentation, optical materials, semiconductor growth and materials characterization; design, processing and characterization of semiconductor devices; optical communication, fiber optics, integrated optics, optical sensors, MOEMS, optofluidics, optical sensors, biophotonics; source development including novel wavelengths, broadband, ultrafast and low coherence; laser-based manufacturing, photodetectors, opto-electronic packaging, ultrafast photonics, terahertz spectroscopy, optical displays, optical coatings and filters.

Accreditation Program: Bachelor of Engineering (BEng) in Engineering Physics
Accreditation Organization: Canadian Engineering Accreditation Board (CEAB)

Year program was founded: 1960
Contact: Dr. Ray LaPierre, Chair and Professor
Email: engphys@mcmaster.ca
Website: http://engphys.mcmaster.ca/
Mailing address: McMaster University, Dept. of Engineering Physics, JHE A315, 1280 Main St. W., Hamilton ON L8S 4L7 Canada

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
Number of opt/phot courses offered in this program: 4

Academic and research specialties related to optics/photons: Four years Bachelors programs available with specialization in Electrical or Computer Engineering with an emphasis on fiber-optics and communications. Four years Bachelors programs available with Physics with an emphasis on optics. Two year MASc (research based) and M. Eng. (course based) programs are available with an emphasis on optical fiber communications and microwave photonics. Research based doctoral programs are available with an emphasis on optical communications, optical networks and microwave photonics.

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
Number of opt/phot courses offered in this program: 4

Accreditation Program: Bachelor of Engineering/Advanced Engineering in Engineering Physics. Master of Applied Science in Engineering Physics and Master of Engineering (Industrial Internship) in Engineering Physics. PhD in Engineering Physics

Type/Description of disciplines/program tracks offered: Physics; Electrical science, Biomedical Engineering, Nanotechnology, Photonics, Biophotonics

Academic and research specialties related to optics/photons: Nanophotonics, optical instrumentation, optical materials, semiconductor growth and materials characterization; design, processing and characterization of semiconductor devices; optical communication, fiber optics, integrated optics, optical sensors, MOEMS, optofluidics, optical sensors, biophotonics; source development including novel wavelengths, broadband, ultrafast and low coherence; laser-based manufacturing, photodetectors, opto-electronic packaging, ultrafast photonics, terahertz spectroscopy, optical displays, optical coatings and filters.

Accreditation Program: Bachelor of Engineering (BEng) in Engineering Physics
Accreditation Organization: Canadian Engineering Accreditation Board (CEAB)
**UNIVERSITY OF TORONTO**

**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 the 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.earyerson.ca/

**Mailing address:** Ryerson University, Electrical and Computer Engineering, 350 Victoria St, Toronto ON M5B 2K3 Canada

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**University of Toronto**

**Mailing address:** COPL, Pavillon d’optique-photonique, Room 2104, Université Laval, Quebec Quebec G1V 0A6 Canada

**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:** Bachelors: Physics, Bachelor in Engineering Physics, Bachelor in Electrical Engineering, Bachelor 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

**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

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**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

**Optics/photonics related programs/degrees offered:** B. Eng. in Optoelectronic Science and Engineering. M. Eng. in Optical Engineering. Ph.D. in Optical Engineering

**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

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**Fudan University**

**Beijing Institute of Technology**

**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:** 1695

**Number of students in optics/photonics related course work:** 1695

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

**Optics/photonics related programs/degrees offered:** Bachelors: Optoelectronics Information Science and Engineering. Masters: Optical Engineering. Doctoral: Optical Engineering

**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://opt.bit.edu.cn/

**Mailing address:** 5 South Zhongguancun Street, Haidian District, Beijing Institute of Technology, School of Optics and Photonics, Beijing 100081 China

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**University of Waterloo**

**Mailing address:** Fudan University, Department of Optical Science and Engineering, School of Information Science & Engineering, Shanghai 200433 China

**Name of department:** Optics and Photonics Education Directory 2020/2021
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: Bachelors, masters
Number of core optics/photonics related degrees available: 5
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, optical instruments, 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.njjust.edu.cn
Mailing address: Nanjing Univ. of Science & Technology, Optics Dept., Room 28-301, Nanjing 210094 China

Universidad de Medellín, Colombia

Name of department: Physics Institute
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 30
Optics/photonics related programs/degrees offered: BSc in Physics; MSc in Physics
Academic and research specialties related to optics/photonics: Optics; Photonics; Nanophotonics; Biomedical optics
Type/Description of disciplines/program tracks offered: Physics; Optical technology, hybrid photoelectric systems, solid image device, interferometry, optical metrology.
Contact: Juan F. Botero-Cadavid, Ph.D., Assistant Professor
Email: jfbotero@unal.edu.co
Website: http://ciencias.medellin.unal.edu.co/escuelas/fisica/
Mailing address: Universidad Nacional de Colombia - Sede Medellin, Escuela de Física, Calle 59A #63-20, Bloque 21, Of. 406, Medellin, Antioquia 50034 Colombia

Universidad de Antioquia

Name of department: Physics Institute
Number of core optics/photonics students currently enrolled in a related program: 5
Number of students in optics/photonics related course work: 10
Optics/photonics related programs/degrees offered: M. Sc. in Physics
Academic and research specialties related to optics/photonics: Optics; Photonics; Nanophotonics; Biomedical optics
Type/Description of disciplines/program tracks offered: Physics; Optical technology, hybrid photoelectric systems, solid image device, interferometry, optical metrology.
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

Name of department: Physics Institute
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 programs/degrees offered: B. Sc. in Physics, M. Sc. in Physics; PhD in Physics
Academic and research specialties related to optics/photonics: Optics; Photonics; Nanophotonics; Biomedical optics
Type/Description of disciplines/program tracks offered: Physics; Optical technology, hybrid photoelectric systems, solid image device, interferometry, optical metrology.
Year program was founded: 1966
Contact: Dr. Efraín Solarte Rodríguez, Professor
Email: efrain.solarte@correounivalle.edu.co
Website: http://www.univalle.edu.co/facultadesydependencias/ciencias.html
Mailing address: Universidad del Valle, Dpto de Física, Calle 13 No 100-00 Ed 320, Santiago de Cali Valle del Cauca 76001 Colombia

Universidad Industrial de Santander

Bucaramanga, Colombia

The physics program offers the titles BS, MS and PhD, with a theoretical and experimental high formation.
Name of department: Physic

Undergraduate/Graduate Programs

Optics and Photonics Education Directory 2020/2021 15
Number of core optics/photonics students currently enrolled in a related program: 18
Number of optics/photonics related courses offered in this program: 21
Optics/photonics related programs/degrees offered: Masters: Physic, Photonics; Masters: Physic master 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 Grupo
Email: jaimen@uis.edu.co
Website: http://www.uis.edu.co/Investigacion/index.htm
Mailing address: Ciudad Universitaria, carrera 27 calle 9, Bucaramanga A.A.678 Colombia

Universidad Tecnológica de Pereira

Name of department: Ingeniería Física
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
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics
Year program was founded: 2002
Contact: Henry Riascos, Dr.
Email: hriascos@utp.edu.co
Website: http://www.utp.edu.co
Mailing address: Physics Department, Universidad Tecnológica de Pereira, Carrera 27 #10-02, Pereira Risaralda Colombia

DENMARK

Technical University of Denmark - 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: 40
Number of optics/photonics related courses offered in this program: 25
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: kar@fotonik.dtu.dk
Website: http://www.fotonik.dtu.dk
Mailing address: Technical Univ. of Denmark, DTU Fotonik, Bldg. 343, Kgs Lyngby DK-2800 Denmark

FRANCE

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. 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

FINLAND

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

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Year program was founded: 2010
Contact: Noora Heikkilä, Coordinator
Email: noora.heikkila@uef.fi
Website: http://www.uef.fi/en/physics/photonics
Mailing address: Univ of Eastern Finland, Institute of Photonics, Joensuu Campus PO Box 111, Joensuu 80101 Finland
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 Montboucons, Besançon 25030 France

Institut d’Optique Graduate School
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 5-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 for foreign students, 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-Diplôme-d’Ingénieur. 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 theorique 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 Université 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 Graduate School
Saint-Étienne, 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 photonics industries. Diploma in Physics and engineering, in Sciences Chemistry or Health and life sciences. The Light S&T 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 Vieuves, 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 optronics. An important point is the close cooperation between University and Industry in the training of students.

Name of department: Photonics and Optroonics 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
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: Lasers, fibre optics, guided optics, non linear optics, detectors technology, optical telecommunication, image processing, spectroscopy, electro-optics, optronics

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 Optroonics, 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

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 micro- and 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-oivm.univ-st-etienne.fr/en/
Mailing address: Hubert Curien Laboratory, UMR CNRS, 18 rue du Pr Benoît Lauras, Saint-Étienne F-42000 France

### Aalen University
Aalen, Germany

Name of department: Optical Engineering / Photonics
Number of core optics/photonics students currently enrolled in a related program: 150
Number of students in optics/photonics related course work: 250
Number of optics/photonics related courses offered in this program: 2
Optics/photonics related programs/degrees offered: Bachelor: Optical Engineering, Master: Photonics
Type/Description of disciplines/program tracks offered: 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/s/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/photonics students currently enrolled in a related program: 150
Number of students in optics/photonics related course work: 300
Number of optics/photonics related courses offered in this program: 40
Optics/photonics 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/photonics: 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/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: 10
Optics/photonics 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/photonics: 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/photonics students currently enrolled in a related program: 142
Number of students in optics/photonics related course work: 200
Optics/photonics 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
Ernst-Abbe-Hochschule Jena - University of Applied Sciences Jena
Jena, Germany
With this educational program tailor-made for optical industries, the University of Applied Sciences Jena meets the needs of the growth potential in this field and of the lack of specialists. The areas of laser technology, optical technologies, optics development and optoelectronics are represented in these programs. The courses are also characterized by practical training sessions in modern, well-equipped laboratories and held with the support of regional companies, dealing in particular with practical courses and with bachelor as well as master theses. The application of the European credit point transfer system (ECTS) allows the completion of parts of the program abroad.

Name of department: SciTec (Science and Technology)

Number of core optics/photonics students currently enrolled in a related program: 170
Number of students in optics/photonics related course work: 480
Number of optics/photonics related courses offered in this program: 21
Optics/photonics related programs/degrees offered: Bachelor of Engineering in Laser and Optical Technologies (6 semesters), Master of Engineering in Laser and Optical Technologies (4 semesters)

Type/Description of disciplines/program tracks offered: Optical engineering; Optics; Photonics; Laser Technique; Optical Design; Optoelectronics

Academic and research specialties related to optics/photonics: Laser technique (laser material processing, laser measurement techniques), Optical development (optical CAD), Optical technology (optical materials, coatings and surface technology), Optoelectronics (fiber optic), Contacts to: optical development, digital projection, micro optics, laser in medicine, optical coatings, lens design, assembly of optics, fiber technology, ophthalmologic technology, spectral sensor technology and others.

Accreditation Program: Bachelor and Master of Engineering in Laser and Optical Technologies

Accreditation Organization: ACQUIN

Admission deadlines: The application deadline for winter semester is August, 15 and for summer semester January, 15 every year.
Year program was founded: 2002
Contact: Mr. Prof. Dr. Burkhard Fleck, Program Director
Email: LOT@eah-jena.de
Website: www.eah-jena.de
Mailing address: Ernst-Abbe-Hochschule Jena, Studiengaenge LOT, Carl-Zeiss-Promenade 2, Jena Thurmingia D-07745 Germany

Harz University of Applied Sciences
Wernigerode, Germany

Name of department: Automation and Computer Science

Number of core optics/photonics students currently enrolled in a related program: 18
Number of students in optics/photonics related course work: 80
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: Certification: Optical Fiber Transmission Systems; Bachelor of Automation Systems, Photonics Systems Engineering

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

Academic and research specialties related to optics/photonics: Polymer-optical fiber (POF) transmission systems, Wavelength Division Multiplexing (WDM) Systems with POF, Metrology of Wavelength and LED and Laser Diode Testing.

Contact: Fischer-Hirschert, Prof. Dr.
Email: u.fischerhirchert@hs-harz.de
Website: https://www.hs-harz.de/u.fischerhirchert
Mailing address: Dpt. of Automation and Computer Science, Photonics Communications Lab, Friedrichstr. 57, Wernigerode 38855 Germany

Heilbronn University
Heilbronn, Germany

Name of department: Mechatronics

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

Number of students in optics/photonics related course work: 200
Number of optics/photonics related courses offered in this program: 4
Optics/photonics related programs/degrees offered: Bachelor of Engineering in Mechatronics. Master of Engineering in Mechatronics

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

Academic and research specialties related to optics/photonics: Optical Design; Optical Metrology

Admission deadlines: 1/15 and 7/15 every year
Year program was founded: 1965
Contact: Prof. Dr.-Ing. Peter Ott, Professor, Optical Engineering
Email: peter.ott@hs-heilbronn.de
Website: http://www.mm.hs-heilbronn.de/mm-e.htm
Mailing address: Heilbronn University, Mechatronics Department, Max-Planck-Str. 39, Heilbronn 74081 Germany

Hochschule Darmstadt,
University of Applied Sciences
Darmstadt, Germany

Name of department: Mathematics and Sciences Faculty

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: 60
Optics/photonics related programs/degrees offered: Bachelor of Science Degreee in Photonic and Machine Vision (7 SemestOptical Technologer), 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 Ph.D. in cooperation with industry / university partners.

Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Electrical engineering; Optics. Photonics. http://www.fbmn.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

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 temporal 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

Number of core optics/photonics students currently enrolled in a related program: 150
Optics/photonics related programs/degrees offered: MSc in Optical Sciences; http://opticalsciences.physik.hu-berlin.de; Dr. rer. nat. (in Physics)

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 HU
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; Prof. 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. Hübers 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 photonic interactions in materials and the properties of photonic materials for applications in electronics. 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 optics & photonic 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 Program EUROPTOTONICS, advanced program 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/ photonics students currently enrolled in a related program: 300

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

Type/Disciplines offered: Optics/ photonics related programs/degrees offered: Certification: The MBA Fundamentals Program for doctoral researchers puts participants in a position to gain management expertise while still working towards their PhD. 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 ZEISS, Polytec 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 of high value, especially in regard to future employments. The research and educational concept of KSOP has been established to optimally reflect the multidisciplinary research among natural scientists and engineers. KSOP research activities cover the most important topics in Optics & Photonics and excel in particular in the five Research Areas: Photonic Materials & Devices, Quantum Optics & Spectroscopy, Biomedical Photonics, Optical Systems & Solar Energy. KSOP also participates in the Europhotonics Master Program of Erasmus Mundus. Further information on www.euroPhotonics.org.

Year program was founded: 2015

Contact: Miriam Sonnenbichler, Program Manager

Email: info-KSOP@idschools.kit.edu

Website: www.kسوف.kit.edu

Mailing address: Karlsruhe School of Optics & Photonics, International Department of the Karlsruhe Institute of Technology (KIT) in one interdisciplinary Graduate School and therefore benefits from a huge knowledge base. Especially the merger with the former national research center Karlsruhe has created a direct link to the research taking place in the laboratories every day. All research areas are strongly interlinked 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.ksoo.kit.edu.


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.ksoo.kit.edu.

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

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.ksoo.kit.edu.

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

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.ksoo.kit.edu.

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

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.ksoo.kit.edu.

Ph.D. Program: The application is possible any time. Ph.D. Program: The application is possible any time.
Number of core optics/photonics students currently enrolled in a related program: 250

Number of students in optics/photonics related course work: 350

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

Optics/photonics related programs/degrees offered: Bachelor’s degree in Physics, Bachelor’s degree in Mechanical Engineering, or related are required for admission. Master’s degree (M.Sc.) in “Optical Technologies”. The opportunity to obtain a PhD in Physics (Dr. rer. nat.) or in Mechanical Engineering (Dr.-Ing.) is given, depending on individual qualifications and funding.

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

Academic and research specialties related to optics/photonics: 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.

Accreditation Program: Master course

Accreditation Organization: ASIN

Year program was founded: 2007

Contact: Prof. Dr. habil. Bernhard Roth, Program Coordinator
Email: master.ot@phoenix.uni-hannover.de
Website: https://www.phoenix.uni-hannover.de/en/studies/optical-technologies-msc/
Mailing address: Hannover Centre for Optical Technologies, Leibniz University Hannover, Nienbrunner str. 17, Hannover D-30167 Germany

Master Programme in
Advanced Optical Technologies
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; Photonics; 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

Max Planck School of Photonics
Jena, Germany

Are you an ambitious Bachelor or master student and aim for an integrated Ph.D. program in Photonics? The Max Planck School of Photonics (MPSPh) is a top tier interdisciplinary graduate school in Germany that provides and coordinates integrated Ph.D. programs in the photonics area especially for excellent graduates and doctoral candidates like you coming from all over the world. Our Ph.D. candidates have the chance to conduct their program at one of the network partners; these are among highly ranked German universities or one of the most renowned research institutions, in many different locations across Germany. Number of core optics/photonics students currently enrolled in a related program: 40 each year (20 study phase + 20 research phase). Masters program(s): The MPSPh offers a combined Master’s and Ph.D. program structure in two phases, exclusively taught in English. Within the first phase, we call it the study phase, candidates obtain a photons master’s degree from one of three teaching universities in Erlangen, Jena or Karlsruhe. The study programs are international and have a high level of practical work included. For Study Phase, offered study programs: - M.Sc. Advanced Optical Technologies - MAOT program in Erlangen-Nuremberg - M.Sc. Photonics - ASP program in Jena - M.Sc. Optics and Photonics - KSOP program in Karlsruhe. Doctoral program(s): Students can either apply for the combined Master’s and PhD program or only for the PhD program. In the PhD phase, called the research phase, candidates conduct their active research work under the supervision of one out of currently 48 Fellows of the MPSPh. The Fellows are well renowned and established professors and group leaders at top institutions all over Germany.

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

Learn more about the research fields of photonics here: https://www.maxplanckschools.de/70459/Research-topics - Advanced Imaging - Attosecond Physics - Biophotonics - Fiber Optics - Laser Source Development - Nanophotonics - Nanoscopy - Optical Design - Optical Communication - Quantum Optics - Strongfield Physics - Ultrafast Imaging - X-ray Science. Our school offers a supporting curriculum to foster interactions between the different physics disciplines to strengthen the research network and to advance personal and professional skills. Apart from an excellent network, the MPSPh offers generous scholarships covering living expenses, study material cost, and a support for health insurance.

Admission deadlines: The next application phase ends on 1st of December 2020 - keep in touch via our website or social media channels:

Contact: Anna Jäger
Email: photonics@maxplanckschools.de
Website: https://www.maxplanckschools.de/en/photons
Mailing address: Max Planck School of Photonics, Hans-Knöll-Straße 1, Jena 07745 Germany

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

Optics/photonics related programs/degrees 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.

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

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.

Year program was founded: 2006

Contact: Ulrich Wittrock, Prof. Dr. Email: wittrock@fh-muenster.de
Website: http://www.laser-technik-photonik.de/en
Mailing address: FH Muenster Univ. of Applied Sciences, Stegerwaldstr. 39, FB 11, Steinfurt 48565 Germany

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

Optics/photonics related programs/degrees offered: Bachelor in Physics with specialization in Optics. Undergraduate lab with experiments on lens characterization, microscopy, spectroscopy, telescopes, digital camera, diffraction, interference, polarization, liquid crystals, laser beam propagation, microwaves, X-rays. Lectures in German language on Applied Optics (Dr. Mahlkow) and Optical Technologies (Prof. Sandner). Masters: Master in Photonics joint program together with Universities of Applied Sciences in Berlin, Brandenburg, Wildau, coordinator Prof. Dr. S. Schrader, duration 2 years; contents at TUB: Fibre optics, Applied Laser Technology. Doctoral: Scientific research in the fields of -nonlinear optics, Raman lasers; -ultrashort laser pulses,
spectroscopy; -laser medicine and technology at LMTB; -dynamics of photosynthesis; -development of diode and crystal lasers; -silicon photonics, glass fibers; -multilayer thin film devices. Degrees offered: Dr rer nat., Dr.-Ing.

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

**Academic and research specialties related to optics/photronics:** The Institute of Optics offers a broad range of facilities in technical optics, laser technology and electron microscopy.

**Admission deadlines:** Deadline June for Bachelor and Master courses starting in October. No application deadline for Ph.D. studies.

**Contact:** Hans Joachim Eichler, Prof. Dr., Head of Laser Group

**Email:** joachim.eichler@tu-berlin.de

**Website:** http://www.physik.tu-berlin.de/institute/OI/

**Mailing address:** Technical University Berlin, Institute of Optics, Sekr. P 1-1, Strasse des 17 Juni 153, Berlin D-10623 Germany

### Technische Hochschule Köln

**Köln, Germany**

Our degree programmes in Optics deal with any physical, chemical and biological laws of nature and technology to make use of light. In the first three semesters our students obtain a comprehensive education in the basics of electrical engineering. Optical lessons start in the third semester covering all aspects: generation, amplification, modulation, transmission and measurement of light.

**Name of department:** Institute of Applied Optics and Electronics

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

**Number of students in optics/photronics related course work:** 180

**Number of optics/photronics related courses offered in this program:** 19

**Optics/photronics related programs/degrees offered:** Bachelors: Electrical Engineering, field of study: Optical Technologies/Photonics (7 semesters, starting in September). Masters: Electrical Engineering, field of study: Optical Technologies/Photonics (3 semesters)

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

**Academic and research specialties related to optics/photronics:** ray and wave optics, theory and methods of optical imaging, microscopy, surface inspection, interferometry, optical 3D measurement techniques, holography, laser technology, light and illumination techniques, microsystems engineering, microfabrication technologies, optical design, biomedical optics

**Admission deadlines:** every year July 15th, courses start in September

**Year program was founded:** 2003

**Contact:** Uwe Oberheide, Prof. Dr.

**Email:** uwe.oberheide@th-koeln.de

**Website:** http://www.angewandte-optik.de

**Mailing address:** TH Köln, Univ of Applied Sciences, Institut f. Angewandte Optik & Elektronik, Betzdorfer Str 2, Köln 50679 Germany

### Technische Universität 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 Photonic Materials

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

**Number of students in optics/photronics related course work:** 90

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

**Optics/photronics related programs/degrees offered:** MS in Physics (10/year); PhD in Physics (10/year)

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

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

**Year program was founded:** 1908

**Contact:** Prof. Karl Leo, Department Head

**Email:** info@iapp.de

**Website:** http://www.iapp.de

**Mailing address:** TU Dresden, IAPP, Dresden D-01062 Germany

### Universität Leipzig

**Leipzig, Germany**

**Name of department:** Felix Bloch Institute for Solid State Physics

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

**Number of students in optics/photronics related course work:** 50

**Number of optics/photronics related courses offered in this program:** 12

**Optics/photronics 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/photronics:** 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, multi-stable light emitting diodes 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:** Universitätsleipzig, Felix Bloch Institute for Solid State Physics, Linnestr. 5, Leipzig 04103 Germany

### 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/photronics students currently enrolled in a related program:** 70

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

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

**Optics/photronics related programs/degrees offered:** B.Sc. in Mechanical Engineering (specialization in Optics), B.Sc. in Medical Engineering (specialization in optics for medizin), M.Sc. in Micro-; Precision and Photonics Engineering MS, M.Sc. in Mechanical Engineering (specialization in optics), M.Sc. in Medical Engineering (specialization in optics for medizin), M.Sc. in Photonic Engineering. PhD, Dr.-Ing. in Mechanical Engineering (specialization in optics)

**Type/Description of disciplines/program tracks offered:** Optical engineering; Optics; Photonics; 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 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: Bachelors: 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: 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 ut 8, Budapest H-1111 Hungary

ICELAND

University of Iceland
Reykjavik, Iceland
Name of department: Faculaty of Physical Sciences
Number of students in optics/photonics related course work: 10
Number of optics/photonics related courses offered in this program: 3
Optics/photonics related programs/degrees offered: BS Physics - 3 years; BS Engineering Physics - 3 years; MS Physics - 2 years; MS Engineering Physics - 2 years. PhD Physics - 3 years; PhD Engineering Physics - 3 years
Type/Description of disciplines/program tracks offered: Physics; Electrical engineering
Admission deadlines: MS, PHD - 15 March; BS - 5 June
Contact: Ari Olafsson, Photonsics Research Professor
Email: ario@hi.is
Website: https://english.hi.is/faculty_of_physical_sciences
Mailing address: Háskóli Islands, Sæmundargata 1, Reykjavik Iceland

INDIA

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://bppiimt.ac.in
Mailing address: 137, VIP Road, Poddar Vihar, Kolkata West Bengal 700052 India

HUNGARY

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, defectors, Q switches, mode-locked lasers, 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: Emeke 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 ut 8, Budapest H-1111 Hungary
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 for exact details.  
**Year program was founded:** 2009  
**Contact:** Dr. R.K. Sinha, Professor and Chief Coordinator, TIFAC-CORE@DCE  
**Email:** dr.rk.sinha@yahoo.com  
**Website:** http://www.dtu.ac.in  
**Mailing address:** Delhi Technological University (Formerly Delhi College of Engineering), Department of Applied Physics, Bawana Road, Delhi 110 042 India  

**Guru Jambheswar University of Science and Technology**  
**Hisar, India**  
**Name of department:** Physics  
**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:** 3  
**Optics/photonics related programs/degrees offered:** Bachelors: Dual Degree BSc(H); MSc (Physics); PhD  
**Type/Description of disciplines/program tracks offered:** Physics; Electrical engineering; Optics; Photonics; Fiber optics  
**Admission deadlines:** Normally in July. For exact details visit University Web Site www.gjus.ac.in  
**Year program was founded:** 1996  
**Contact:** Devendra Mohan, Professor  
**Email:** devendra@gjus.org  
**Website:** http://www.gjus.ac.in  
**Mailing address:** Department of Physics, Guru Jambheshwar University of Science and Technology, Hisar Haryana 125001 India  

**Indian Institute of Space Science and Technology**  
**Trivandrum, India**  
**Name of department:** Department of Physics  
**Number of core optics/photonics students currently enrolled in a related program:** 15  
**Number of students in optics/photonics related course work:** 50  
**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Optics; Photonics; Biomedical optics  
**Year program was founded:** 2012  
**Contact:** Dr. Rakesh Kumar Singh, Advisor  
**Email:** krakesh@iist.ac.in  
**Website:** http://www.iist.ac.in  
**Mailing address:** Indian Institute of Space Science and technology, Trivandrum Kerala 695547 India  

**Indian Institute of Technology Delhi**  
**New Delhi, India**  
**Name of department:** Physics  
**Number of core optics/photonics students currently enrolled in a related program:** 150  
**Number of students in optics/photonics related course work:** 400  
**Number of optics/photonics related courses offered in this program:** 50  
**Optics/photonics related programs/degrees offered:** Bachelors: Bachelor of Technology in Engineering Physics. Masters: Master of Science in Physics; 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:** Anurag Sharma, Professor & Head of the Department  
**Email:** hodphysics@admin.iitd.ac.in  
**Website:** http://physics.iitd.ac.in  
**Mailing address:** Physics Department, Indian Institute of Technology Delhi, New Delhi Delhi 110016 India  

**Indian Institute of Technology Roorkee**  
**Roorkee, India**  
**Name of department:** Physics  
**Doctoral program(s):** PhD Photonics  
**Contact:** Vipul Rastogi, Associate Professor  
**Email:** vipul.rastogi@osamember.org  
**Website:** http://www.iiitr.ac.in/departments/PH/pages/index.html  
**Mailing address:** Department of Physics, Roorkee Uttarakhnad 247667 India  

**Manipal Academy of Higher Education**  
**Manipal, India**  
**M.SC. PHOTONICS OVERVIEW:** ELIGIBILITY: Duration: 2 years divided into 4 semesters. Citizenship: Indian nationals can apply under the General Category. Foreign nationals or Non Resident Indians or Indian nationals supported by NRI relatives can apply under the Foreign/NRI Category. Qualification: Candidate should have Bachelor’s Degree with a minimum of 55% marks in any of the following areas at the time of admission • B.Sc. in Physics/Electronics/Appplied Physics/Photonics • B.Tech. in Electronics/Electrical/Material Science/App lied Physics. M.SC. NANOSCIENCE AND TECHNOLOGY OVERVIEW: Nanoscience and Technology is an interdisciplinary field with tremendous impact on our day to day life. It finds applications in medical sciences, biotechnology, pharmaceuticals, imaging technology, metallurgy and material science etc. Career in this emerging field has numerous promising opportunities in Industries, Academia, Research and Development organisations. ELIGIBILITY: Duration: 2 years divided into 4 semesters. Citizenship: Indian nationals can apply under the General Category. Foreign nationals or Non Resident Indians or Indian nationals supported by NRI relatives can apply under the Foreign/NRI Category. Qualification: Candidate should have Bachelor’s Degree with a minimum of 55% marks in any of the following areas at the time of admission • B.Sc. in Physics/Chemistry/ B. Tech. in Chemical Engineering/ Biomedical Engineering, Material Science/ Applied Physics. M.SC. BIOPHYSICS OVERVIEW: ELIGIBILITY: Duration: 2 years divided into 4 semesters. Citizenship: Indian nationals can apply under the General Category. Foreign nationals or Non Resident Indians or Indian nationals supported by NRI relatives can apply under the Foreign/NRI Category. Qualification: Candidate should have Bachelor Degree with a minimum of 55% marks in any of the following areas at the time of admission • B.Sc. Physics /Bio-informatics/Biology (10+2 with mathematics) /Chemistry /Biotechnology /Biochemistry / B. Tech. Bioinformatics /Biotechnology /Industrial Biotechnology. PHD COURSE CERTIFICATE COURSES OVERVIEW: The
Department of Atomic and Molecular Physics offers certificate courses in Laser Application in Biology and Medicine. Practical and demonstration experiments involved in this program are laser safety drill, HPLC – LiF and LiF prototype, Raman Spectroscopy and optical tweezers, laser induced breakdown spectroscopy, femtosecond laser applications, interference and diffraction experiments, UV-VIS absorption measurements, surface plasmon resonance and FTIR spectrometry. The duration of the course is three months and consists of theory and practical sessions. CERTIFICATE COURSE IN NANO SCIENCE & TECHNOLOGY: The Department of Atomic and Molecular Physics offers a certificate course in Nanoscience and Technology. The course features include the basic understanding of nanoscience and technology, preparation and characterization of nanoparticles and their applications in: energy, medicine, pharmaceuticals science, biological sciences and biotechnology. Practical and demonstration experiments involved in this program are laser safety drill, HPLC – LiF and LiF prototype, Raman Spectroscopy and optical tweezers, laser induced breakdown spectroscopy, femtosecond laser applications, interference and diffraction experiments, UV-VIS absorption measurements, surface plasmon resonance and FTIR spectrometry. The duration of the course is three months and consists of theory and practical sessions. Qualification: Candidates with Bachelor degree in any of the following disciplines: Science/Medicine/Engineering/ Nursing/ Pharmacy/Allied Health (Students in the final year of their course are also eligible).

Name of department: Department of Atomic and Molecular Physics
Number of core optics/photonics students currently enrolled in a related program: 30
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%20Photo.png; http://huewnep.wordpress.com/category/about-us/
Contact: Dr. Ajeetkumar Patil, Associate Professor & Faculty Adviser, SPIE Manipal Univ. Chapter
Email: ajeeitkumar.p@manipal.edu
Website: https://manipal.edu/damp.html
Mailing 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

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: msaikat2004@gmail.com
Website: https://www.tcollege.ac.in/index.php?id=19
Mailing address: EM 4/1 Sector V, Salt Lake, Kolkata West Bengal 700091 India

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 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/ instrumentation/ 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: 80
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; 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. Kalil Bhattacharya, Head of Applied Optics & Photonics Dept.
Email: kbaop@caluniv.ac.in
Website: http://www.caluniv.ac.in/academic/department/App_optics_photonics.html
Mailing address: University of Calcutta, Applied Optics & Photonics Dept., Technology Campus, JD-2, Sector III Kolkata, Kolkata 700 106 India

University of Engineering & Management, Kolkata, India
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: Indranil, Bhattacharya
Email: indranil.bhattacharya@iemcal.com
Website: http://www.uem.edu.in/
Mailing address: University Area, Plot No.III – B/5, Main Arterial Road, New Town, Action Area - III, Kolkata 700160 India
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
Number of core optics/photonics students currently enrolled in a related program: 30
Number of students in optics photonics related course work: 30
Optics/photonics related programs/ degrees offered: Bachelor:

Academic and research specialties related to optics/photonics: Morentechnique, Speckle interferometry, Fresnel diffraction, Optical properties of nano-structures

Admission deadlines: 8/31/2020
Year program was founded: 1993
Contact: Arashmid Nahal, Head of the Atomic and Molecular Physics Department
Email: nahal@ut.ac.ir
Website: http://physics.ut.ac.ir
Mailing address: Kargar Shomally Ave., in front of the 19th street, Tehran 1439955961 Iran

National University of Ireland, Galway
Galway, Ireland

Name of department: School of Physics
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
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)

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

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, Photacoustic, Image Processing

Admission deadlines: No formal deadline.
Year program was founded: 1934
Contact: Prof. Martin J. Leahy, Professor of Applied Physics
Email: martin.leahy@nuigalway.ie
Website: http://www.nuigalway.ie/physics/
Mailing address: School of Physics, National University of Ireland, Galway, University Rd., Galway H91 CF50 Ireland

University College Cork
Cork, Ireland

Major international research efforts in photonics in the Departments of Physics, EE, Chemistry and the inter-disciplinary Tyndall Institute. See faculty research interests for details or consult these useful websites:


Name of department: Physics/Electrical Engineering/Microelectronics/ Tyndall Institute
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: 10
Optics/photonics related programs/degrees offered: Bachelors: BSc Physics BSc Physics/Mathematics BSc Physics/Applied Mathematics BSc Physics/Mathematical Science BSc Astrophysics BSc Chemical Physics BE Electrical Engineering BE Microelectronics. Masters: MSc Physics MSc Applied Physics MSc Photonics, MEngSc Electrical Engineering/MEngSc Microelectronics. Doctoral: PhD in Physics, Electrical Engineering or Microelectronics

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

Academic and research specialties related to optics/photonics: MSc/ MEngSc/PhD in Physics, Electrical Engineering or Microelectronics with specialization in Photonics

Admission deadlines: MSc and Postgraduate Higher Diploma applications by 15 Aug each year. PhD applications accepted continuously.
Year program was founded: 1993
Additional comments: http://www.tyndall.ie
Contact: Professor John G. McNerny, Dean of School
Email: j.mcnerny@ucc.ie
Website: http://www.ucc.ie
Mailing address: Department of Physics, Kane 214, University College, Cork Ireland

University College Dublin
Dublin, Ireland

Name of department: School of Physics
Number of core optics/photonics students currently enrolled in a related program: 10
Number of students in optics/photonics related course work: 70
Number of optics/photonics related courses offered in this program: 9
Optics/photonics related programs/degrees offered: BSc in Experimental Physics; BSc in Theoretical Physics; BSc in Physics with Astronomy and Space Science. MSc in Physics; MSc in Nanotechnology; MSc in Physics by Negotiated Learning.

Type/Description of disciplines/program tracks offered: Physics; NanoBio Science

Academic and research specialties related to optics/photonics: Nano Technology; Medical Physics

Admission deadlines: For MSc programmes deadline of application is September 1st.
Year program was founded: 2008
Contact: Brian Vohnsem, Dr Email: brian.vohnsen@ucc.ie
Website: http://www.ucd.ie/physics/
Mailing address: School of Physics, University College Dublin, Belfield Campus, Dublin 4 Ireland

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 israeli teaching year, 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 he 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 electrooptics, image processing, radiation and matter, statistical optics, holography and diffractive optics, integrated optics in communications, wireless optical communication, principles of fiber optic communication, optical properties of biomaterials, optical metrology, industrial entrepreneurship in electrooptics, biomedical optical instrumentation, eye and vision optics, lasers, nonlinear optics, processing of biomedical images, selected topics in electromagnetism for electrooptics engineering, pattern recognition, solar cells, semiconductor and photonic devices, quantum optics, electrooptics lab, optics and photonics lab, and optical telecommunication lab. To celebrate the 10th anniversary of the EOE unit organized the “Optics and Photonics Day” in May 16th, 2011. Links: Department of Electrooptical Engineering: http://csmprod.bgu.ac.il/engn/elecoph/. 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 Electrooptical Engineering. Ph.D in Electrooptical 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://csmprod.bgu.ac.il/eng/engn/elecoph
Mailing address: Ben Gurion Univ of 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, optical communications, optical signal processing, microwave photonics
Year program was founded: 1973
Contact: Dr. Ady Arie, 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, photonic 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

University of Pavia

Pavia, Italy

In Photonics we count 2 Emeritus Professors, 3 Full Professors, 6 Associate Professors and 6 Assistant Professors called “Ricerctori”) plus 3 technicians. in the DIII Department there are additional 3 Emeritus, 12 Full, 14 Associate and 8 Assistant Professors.

Name of department: DIII
Number of core optics/photonics students currently enrolled in a related program: 18
Number of students in optics/photonics related course work: 140
Number of optics/photonics related courses offered in this program: 9
Optics/photonics related programs/degrees offered: Bachelors: general Bachelor in Electrical Engineering. Masters: Master (2-years) in Photonics. Doctoral: PhD (3-years) in Electronic Engineering track Photonics
Type/Description of disciplines/program tracks offered: Optical engineering; Electrical engineering; Optics; Photonics; Biomedical optics; Fiber optics
Academic and research specialties related to optics/photonics: Academic research specifically related to optics/photonics: photonic instrumentation, optoelectronic devices, fiberoptic communications, ultrafast lasers, nonlinear optics
Year program was founded: 1992
Contact: S. Donati, Professor
Email: donati@unipv.it
Website: http://iii.unipv.it/index.php
Mailing address: v Ferrata 1, DIII, Univ Pavia, Pavia Lombardy 27100 Italy

Kansai University

Suita, Osaka, Japan

Name of department: Mechanical Engineering
Number of core optics/photonics students currently enrolled in a related program: 16
Number of students in optics/photonics related course work: 16
Optics/photonics related programs/degrees offered: BS in Engineering, MS in Engineering. Doctor of Engineering.
Academic and research specialties related to optics/photonics: Optical MEMS
Contact: Yasuhiko Arai, Professors
Email: arai@kansai-u.ac.jp
Website: http://www.kansai-u.ac.jp
Mailing address: Kansai Univ., Dept. of Mechanical Engineering, 3-3-35, Yamata-cho, Suita, Osaka 564-8680 Japan

Osaka University

Suita, Japan

Osaka University’s Photonics Center is engaged in the following projects: 1) JSPS Core To Core Program “Advanced Nanophotonics in the Emerging Fields of Nano-imaging, Spectroscopy, Nonlinear Optics, Plasmonics/Metamaterials and Devices” 2) Osaka University-AIST OIL

Name of department: Photonics Center
Type/Description of disciplines/program tracks offered: Physics; Optical engineering; Optics; Photonics; Nanophotonics; Plasmonics; Metamaterial; Metasurface; Nanospectroscopy; Biophotonics; Optical Microscope; Nonlinear optics; Biomedical optics; Fiber optics; Photonic materials; Photonic crystals; Laser crystalization; 3D printer
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

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**Yonezawa, Japan**

Yamagata University

Yonezawa, Japan

Yamagata University’s Department of Electrical 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

**Optics/photonics related courses offered in this program:** 30

**Types/Description of disciplines/program tracks offered:**
- **Optical Engineering:** 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.yamagata-u.ac.jp/intro_opt.html
**Mailing address:** 7-1-2 Yoto, Department of Optical Engineering, Yamagata Tochigi 992-8585 Japan

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**Kuwait**

**Kuwait Institute for Scientific Research**

**Safat, Kuwait**

Interdisciplinary program of applied optics in 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

**Optics/photonics related courses offered in this program:** 2

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

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**Malaysia**

**Cyberjaya, Malaysia**

**Multimedia University**

**Name of department:** Faculty of Engineering


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

**Contact:** Prof. Hin Yong Wong, 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**

**Name of department:** Laser Center, Ibru 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

**Optics/photonics related courses offered in this program:** 8

**Type/Description of disciplines/program tracks 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
**NAME OF DEPARTMENT:** The Master of Science (Optics) 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. 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. The program consists of 12 terms completed in 48 months, with 5 core curriculum courses, 4 electives, 2 Thesis and Link to Industrial Sector courses, and 1 for thesis. Additionally, a thesis must be written to obtain the degree. Within the first year and a half a candidacy exam presenting the PhD dissertation defense. Two 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. INAOE provides support documentation for FMS immigration form.

**CONTACT:** Dr. Luis Armando Díaz-Torres, Director of Graduate Studies Office.

**WEBSITE:** http://www.cio.mx/en/

**Mailing address:** Loma del Bosque 115, Colonia Lomas del Campestre, Leon, Gto. 37150 Mexico

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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

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

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Optics; Photonic engineering; Electrical Engineering; Microelectronics; Materials Science.

**Contact:** Álvaro Armenta-Ramade, Head of Photonics Research Group

**Website:** www.cicese.mx

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

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**Instituto Nacional de Astrofísica, Óptica y Electrónica (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 an optical MSc program must present a qualification 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 qualification 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. Two 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 Formación Académica

**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:** 50

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Optics; Photonic engineering; Electrical Engineering; Microelectronics; Materials Science. 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 an optical MSc program must present a qualification 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 qualification 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. Two 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 Formación Académica

**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:** 50

**Type/Description of disciplines/program tracks offered:** Physics; Optical engineering; Optics; Photonic engineering; Electrical Engineering; Microelectronics; Materials Science. 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 an optical MSc program must present a qualification 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 qualification 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. Two 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 Formación Académica
UNDERGRADUATE/GRADUATE PROGRAMS

Universidad Tecnologica de Tulancingo

Tulancingo, Mexico

First Optics and Photonics Engineering undergraduate program in Mexico. 

Name of department: Centro de Tecnologias Opticas y Fotonicas

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

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

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

Optics/photronics related programs/degrees offered: Optics and Photonics engineering undergraduate program available.

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

Year program was founded: 2012

Contact: Noél-Ivan Toto-Arellano, Dr.

Email: noel.toto@utec-tgo.edu.mx

Website: http://www.utec-tgo.edu.mx/

Mailing address: Camino a Ahuehueteulla # 301 Col. Las Presas, Col. Las Presas, Tulancingo Hidalgo 43642 Mexico

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

Name of department: Imaging Science & Technology

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

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

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

Optics/photons 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/photons: - interferometry - advanced lithographic imaging methods - super high-density optical storage - terahertz 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 specializations: Laser optics, Everyday optics, Electrodynamic 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 studies 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 an undergraduate 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.
Admission deadlines: For admission details, deadlines, documents, see: https://www.pw.edu.pl/Kandydaci - For Residents; http://www.students.pw.edu.pl/ - For Non-residents.
Year program was founded: 2007
Contact: Adam Styk, Assistant Professor
Email: a.styk@mchtr.pw.edu.pl
Website: http://zif.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 Joao Pedro Araujo, Group Leader
Email: jearaujo@fc.up.pt
Website: http://www.fc.up.pt
Mailing address: Instituto de Físico dos Materais da Universidade do Porto, Rua do Campo Alegre 687, Porto 4169-007 Portugal
**UNDERGRADUATE/GRADUATE PROGRAMS**

**RUSIAN FEDERATION**

**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, Geocology  
**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:** info@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:** Physics School  
**Number of core optics/photonics students currently enrolled in a related program:** 1515  
**Number of students in optics/photonics related course work:** 1515  
**Optics/photonics related programs/degrees offered:** Bachelor’s: 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.  
**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 Photonics 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’s: 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 in 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
**Saratov State University**

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 biomedicine, nanophotonics, optical biosensing, optical information and telecommunication systems, photonic-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:** 2380

**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 Bioengineering 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.psult.ru

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

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**King Abdullah University of Science & Technology (KAUST)**

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

**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

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**Consejo Superior de Investigaciones Científicas**

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.osa.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:** 20

**Optics/photonics related courses offered in this program:** 10

**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
ICFO - The Institute of Photonic Sciences
Castelldefels (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; EUROPHOTONICS 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, Castelldefels (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 in 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, oncolgical and vascular fluorescence, thermal and hyperspectral imaging, aerial and satellite imaging, nonimaging optics and solar energy.

Number 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 (GITI), 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.etsi.us.es/DFA/OAyH3D
Mailing address: Engineering School (ETSI), 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.

Number of department: Physics, Chemistry and Biology
Number of core optics/photonics students currently enrolled in a related program: 3
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 • able to apply key concepts and principles qualitatively in simple and more complicated engineering applications • 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 options/photonics related courses offered in this program: 33
Accreditation Program: EU-ACR Label (European -Accredited Engineering Bachelor Degree Programm)
Accreditation Organization: ASIN
Admission deadline: Application deadline is end of April
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: 50
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 30
Options/photonics related programs/degrees offered: Bachelor: B.Sc. 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 photonic 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

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
Options/photonics related programs/degrees offered: Bachelor of Sciences in Photonics

Accepted research and specializations related to optics/photonics: Prototyping

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
TAIWAN

National Taipei University of Technology
Taipei, Taiwan

Name of department: Electro-Optical Engineering
Number of core optics/photonics students currently enrolled in a related program: 335
Number of students in optics/photonics related course work: 200
Number of optics/photonics related courses offered in this program: 42


Admission deadlines: https://oia.ntu.edu.tw/study-at-ntu/degree-student/202021admission
Contact: Shi-Wei Chu, Professor
Website: http://www.phys.ntu.edu.tw/
Mailing address: R422, Department of Physics, National Taipei University, No1, Sec. 4, Roosevelt Road, Taipei 10617 Taiwan

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/photonics related course work: 100
Number of optics/photonics related courses offered in this program: 10

Optics/photonics related programs/degrees offered: Bachelors: 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 Material 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/photonics: Design, development, and characterization of novel light sources, optoelectronic materials, microphotonic 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/photonics students currently enrolled in a related program: 30
Number of students in optics/photonics related course work: 200
Number of optics/photonics related courses offered in this program: 5

Optics/photonics related programs/degrees offered: MsC in Telecommunications (5 years) with research in photonics related topics. PhD in telecommunications with research in photonics related topics

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

Academic and research specialties related to optics/photonics: 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: Oleg V. Angelsky, Director of Physical, Technical and Computer Sciences Institute
Email: oangelsky@chnu.edu.ua
Website: http://ptcsi.chnu.edu.ua/en
Mailing address: Chernivtsi National Univ. after Yu. Fed'kovich, Dept of Correlation Optics Kotsysubinsky Str. 2, Chernivtsi 58012 Ukraine

Lviv 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. Bobyt'skiy, Head of Photonics Dept.
Email: yaroslav.v.bobyt'skiy@ipnu.ua
Website: http://www.ipnu.edu.ua
Mailing address: Lviv Polytechnic National Univ., Photonics Dept., 12 Stepana Bandery Str., Lviv 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 Volodyymyrska 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 MRes 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 Gragg 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/photonics students currently enrolled in a related program: 10
Number of optics/photonics related courses offered in this program: 5
Optics/photonics 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: msci@cardiff.ac.uk
Website: http://www.astrophotonics.cardiff.ac.uk
Mailing address: Cardiff School of Physics & Astronomy, Cardiff University, Queens Bldgs. The Parade, Cardiff CF24 3AA United Kingdom

Cranfield University
Cranfield, United Kingdom

Name of department: Engineering Photonics
Number of core optics/photonics students currently enrolled in a related program: 12
Number of optics/photonics related courses offered in this program: 1
Optics/photonics 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/photonics: Optical Instrumentation, Optical fibre sensors, short and long period fiber grating 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: r.p.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) programme 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/photonics students currently enrolled in a related program: 250
Optics/photonics related programs/degrees offered: Bachelors: 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.iqpps.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/photonics: Optoelectronics, Bio-photonics, nonlinear optics, laser, physics and engineering, fibre optics, instrumentation, semiconductor materials, quantum optics, nano-photonics.
Administration 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-photonics/) 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/photonics students currently enrolled in a related program: 25
Number of students in optics/photonics related course work: 50
Number of optics/photonics related courses offered in this program: 5
Optics/photonics related programs/degrees offered: MSc in Physics with Nanophotonics. MSc in Physics with Quantum Dynamics. MSc in Photonics. MRes in Plastic Electronics. 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/photonics: 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: Bachelor's: 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: https://www.kent.ac.uk/studying/postgrad/apply/index.html

Year program was founded: 2006

Contact: Adrian Podoleaneu, Professor of Biomedical Optics
Email: ap@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: fps-philpday@solon.ac.uk
Website: http://www.ors.solon.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; PhD projects currently running in ultrashort pulse lasers and devices, semiconductor
spectroscopy, solid-state lasers, optical parametric devices, optical instrumentation, nanostructured 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.st-and.ac.uk/physics
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

United States
ALABAMA
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 Space Science; PhD in Optics/Lasers; PhD in Materials Science
Type/Description of disciplines/program tracks offered: Physics
Academic and research specialties related to optics/photonics:
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

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. Internationals: 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

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
University of Arkansas at Fayetteville
Fayetteville, Arkansas USA

The Microelectronics-Photonics program at the University of Arkansas, Fayetteville, is an interdisciplinary graduate program designed to expand a student’s knowledge beyond the boundaries of traditional departmental based graduate programs. Students in the Microelectronics-Photonics program will participate in cross-departmental research, will take applications-intensive classes from multiple engineering and science departments, and will develop workplace productivity skills in a simulated industrial environment. The microEP graduate program research centers on microelectronic-photonic materials; the creation of high-performance, miniaturized devices and systems made from these materials; and an understanding of the economics that affect successful introduction of these devices and systems into industry and the community.

Name of department: Microelectronics-Photonics Graduate Program
Number of core optics/photonics students currently enrolled in a related program: 15
Number of optics/photonics related courses offered in this program: 6

University of California
Pasadena, California 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: c cgarske@caltech.edu
Website: http://www.medc.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 EE530 (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

Optics/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
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/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: 4
Optics/photonics related programs/degrees offered: BS in Physics; Optics; MS in Physics
Type/Description of disciplines/program tracks offered: Physics; Optical Engineering; Optics; Photonics; Fiber Optics
Academic and research specialties related to optics/photonics: 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, laser 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/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: 2
Optics/photonics related programs/degrees offered: BS in physics, BA in physics; MS in physics
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonics; Photonics 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

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 focuses 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/photonics students currently enrolled in a related program: 30
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: 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/photonics: 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/photonics students currently enrolled in a related program: 18
Number of students in optics/photonics related course work: 20
Number of physics courses offered in this program: 2
Optics/photonics 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.
UNDERGRADUATE/GRADUATE PROGRAMS

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 118; Stanford CA 94305-4090 USA

University of California, Davis SPIE \* POSTER \* OSA \* Student Chapter
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: vsrinivas@ucdavis.edu
Website: https://bme.ucdavis.edu/biophotonics/
Mailing address: 451 E Health Sciences Dr., Davis CA 95616 USA

University of California, Irvine SPIE \* POSTER \* OSA \* Student Chapter
Irvine, California USA
Name of department: Physics and Astronomy
Contact: Prof. Peter Taborek, Chair
Email: ptaborek@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 SPIE \* POSTER \* OSA \* Student Chapter
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 E&CE, Santa Barbara CA 93106 USA

University of Colorado at Santa Cruz SPIE \* POSTER \* OSA \* Student Chapter
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 SPIE \* POSTER \* OSA \* Student Chapter
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 seminars, 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/immersive cameras, intraocular and extraocular 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, optoelectronic materials, optoelectronic and photonic devices, nanophotonics, photonic implementations of neural networks, photonic bandgap materials and devices, biomedical optics, biophotonics, physiology of vision, and visual psychophysics.
Year program was founded: 1971
Contact: Prof. Armand R. Tanguay, Jr., Professor
Email: atanguay@usc.edu
Website: https://minghsiehece.usc.edu/
Mailing address: University of Southern California, 520 Seaver Science Center, University Park, MC-0483, Los Angeles CA 90089-0483 USA

COLORADO

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; Ph.D
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, 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: ECS/BE/ME/PH

Number of core optics/photronics students currently enrolled in a related program: 100

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

Type/Description of disciplines/program tracks offered: Certificate in Optics for MS and PhD students.

Academic and research specialties related to optics/photronics: ultrafast optical physics and applications; liquid crystal devices, physics and applications; nonlinear optics; optical solitons; atom optics, bessel 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-photronics.

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

CONNECTICUT

University of Connecticut, Storrs, Connecticut USA

The Electrical and Computer Engineering Department offers study leading to the degrees of Master of Science and Doctor of Philosophy in the field of study of Electrical Engineering with an area of concentration based on a wide selection of courses and research activities in the department. One of the official areas of concentration available under the Electrical Engineering Degree is “Electronics, Photonics, and Biophotonics.”

Name of department: Electrical and Computer Engineering

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

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

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

Academic and research specialties related to optics/photronics: Multidimensional Optical Sensing and Imaging Systems Lab (www.MOSIS.Engr.UConn.edu): dedicated to research and education on integrating optics, photonics, and computational algorithms and systems for advancing the science and engineering of imaging from nano to macro scales. Please visit our WEB site for more information.

Dedicated to research and education on information systems, signal and image processing, neural computing, real-time image recognition, information security, data encryption, optical signal processing systems, three dimensional display, three-dimensional signal processing, ultrafast communication systems, ultrafast signal processing and computing, and optical data storage. The activities include both algorithms development, system design, and hardware implementation. The facilities include advanced computers, PCs, MACs, SUN workstations, extensive software packages, state of the art spatial light modulators, high definition display devices, high definition detector arrays, lasers, stable tables, optical benches, optical accessories, and holographic systems. Micro/ Opto-electronics Research Lab: this lab is equipped with CVD reactors for Ge and Si growth; MOCDV reactors for ZnS, ZnMgSSe, ZnZnCdSe growth (including a quantum dot growth setup) and PL and X-Ray setups for characterization; a photolithographic clean room to process lasers, transistors and integrated circuits; measurement setups to characterize lasers, modulators, and filters; and dedicated workstations for computer-aided design (Cadence) and simulation. Current research is focused on 1.55 micron MQW optical modulators, tunable lasers, SiGe FETs, terahertz MODFETs and quantum interference transistors, quantum dot-based nanophosphors and lasers.

Contact: Mary McCarthy, Business Manager

Email: marymc@engr.uconn.edu

Website: ee.uconn.edu

Mailing address: Univ. of Connecticut, Dept. of Electrical Engineering, 371 Fairfield Way, U-4157, Storrs CT 6269 USA

Wesleyan University, Middletown, Connecticut USA

Name of department: Physics

Number of core optics/photronics students currently enrolled in a related program: 5

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

Optics/photronics related programs/degrees offered: BS/BA in Electrical and Computer Engineering, Physics or Chemistry; MS in Physics and Chemistry; MS in ECEN with specialization in Opto-Electronics; PhD in ECEN, 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/photronics: optical and quantum electronics; quantum nanophotonics; nanoscale materials and devices; ultrafast phenomena; polaritonics and nanophotonic devices; ultracold atomic gases.

Contact: Lutz Huwel, Professor of Physics

Email: lhuwel@wesleyan.edu

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

Mailing address: Wesleyan University, Department of Physics, 265 Church Street, Middletown CT 6459 USA

DELAWARE

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 its 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/photronics students currently enrolled in a related program: 40

Optics/photronics 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: ECEC/BE/ME/PH

Number of core optics/photronics students currently enrolled in a related program: 15
UNDERGRADUATE/GRADUATE PROGRAMS

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, BBE: Bachelor in Biomedical Eng, BME: 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

University of Florida
Gainesville, Florida USA
A multidisciplinary materials science department covering specialties ranging from metals to glass/ceramics to semiconductors to optical materials.

Number of department: Materials Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 300
Number of optics/photonics related programs/degrees offered: BS in Materials Science and Engineering, MS Optics & Photonics. Other UCF programs include: MS in Electrical Engineering, MS Physics, PhD Physics.
Type/Description of disciplines/program tracks offered: Physics, 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: Professor-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 Scuplorus St., Bldg 55, PO. Box 162700, Orlando, FL 32816-2700 USA

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

University of Florida
Gainesville, Florida USA
number of students in optics/photonics related course work: 10
Optics/photonics related programs/degrees offered: B.S. in Electrical 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, 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: Professor-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 Scuplorus St., Bldg 55, PO. Box 162700, Orlando, FL 32816-2700 USA

Georgia Institute of Technology
Atlanta, Georgia USA

Name of department: Electrical Engineering
Number of core optics/photonics students currently enrolled in a related program: 10
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
Accreditation Organization: ABET, SACS
Admission deadlines: December 15

University of Florida
Gainesville, Florida USA

Name of department: Materials Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 300
Number of students in optics/photonics related course work: 300
Optics/photonics related programs/degrees offered: BS in Materials Science and Engineering, MS Optics & Photonics. Other UCF programs include: MS in Electrical Engineering, MS Physics, PhD Physics.
Type/Description of disciplines/program tracks offered: Physics, 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: Professor-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 Scuplorus St., Bldg 55, PO. 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.

Number of department: Materials Science and Engineering
Number of core optics/photonics students currently enrolled in a related program: 300
Number of students in optics/photonics related course work: 300
Optics/photonics related programs/degrees offered: BS in Materials Science and Engineering, MS Optics & Photonics. Other UCF programs include: MS in Electrical Engineering, MS Physics, PhD Physics.
Type/Description of disciplines/program tracks offered: Physics, Electrical engineering; Optics; Photonics
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

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. Murshed, Professor, Director of Optoelectronics Laboratory
Email: murshed@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
UNDERGRADUATE/GRADUATE PROGRAMS

Year program was founded: 1885
Contact: Jackie Nemeth, Communications Manager
Email: jackie.nemeth@ece.gatech.edu
Website: http://www.ece.gatech.edu
Mailing address: School of Electrical and Computer Engineering, 777 Atlantic Dr NW, Atlanta GA 30332-0250 USA

Georgia State University
Atlanta, Georgia USA
Name of department: Physics & Astronomy
Number of core optics/photonics students currently enrolled in a related program: 45
Number of students in optics/photonics related course work: 30
Number of optics/photonics related courses offered in this program: 6
Optics/photonics related programs/degrees offered: B.S. in Physics - Applied Physics; MS in Physics - Applied Physics; PhD in Physics, PhD in Astronomy, PhD in Astrophysics
Type/Description of disciplines/program tracks offered: Physics; Technology
Academic and research specialties related to: optics/photonics: integrated optoelectronics, birefringent and non linear, optical waveguided heterostructures; nano-photonics and nano-plasmonics; Interferometry, adaptive and active optics; optical properties of semiconductors; Novel optical applications in Astronomy, Theoretical studies of absorption and emission of radiation by Atoms, Optical applications in artificial neurons, Optical and infrared interferometry.
Year program was founded: 1885
Contact: Xiaochun He, Professor & Graduate Director (Physics or Astronomy)
Email: xhe@gsu.edu
Website: http://phy-astr.gsu.edu/
Mailing address: Department of Physics & Astronomy, 29 Peachtree Center Avenue, 400 Science Annex, Atlanta GA 30303 USA

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: 1985
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: gspaldin@iuw.edu
Website: https://www.iwu.edu/physics/
Mailing address: 201 E. Beecher St., Bloomington IL 61701-7222 USA

University of Illinois
Urbana, 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, 1110 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/
Mailing address: Department of Physics, University of Illinois at Chicago, 845 W Taylor St M/C 273, Chicago IL 60607 USA

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**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 Bachelor/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 curriculum 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 of 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/photronics students currently enrolled in a related program:** 66  
**Number of students in optics/photronics related course work:** 100  
**Number of optics/photronics related courses offered in this program:** 30  
**Optics/photronics 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:**  
Academic and research specialties related to: optics/photronics: Optical instrument design, fiber optic components/sensors, light scattering, computer-aided optical system design, speckle techniques holography, psi, structural/magnetic properties of materials, nanostructured/nanoparticulate magnetic materials, x-ray absorption studies with synchrotron radiation, UV-visible absorption/fluorescence studies, semiconductor materials/packaging, micro/nanowires, 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:** Galen Duree, Jr., Chair  
**Email:** Galen.Duree@rose-hulman.edu  
**Website:** http://www.rose-hulman.edu/phoe  
**Mailing address:** Physics and Optical Engineering, Rose-Hulman Institute of Technology, 5500 Wabash Ave., CM 169, Terre Haute IN 47803 USA

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**Boston University**  
**Boston, Massachusetts USA**

Our program offers a spectrum of graduate education in photonics. The Ph.D. study in photonics offers 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/photronics students currently enrolled in a related program:** 20  
**Number of students in optics/photronics related course work:** 30  
**Number of optics/photronics related courses offered in this program:** 19  
**Optics/photronics 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:**  
Academic and research specialties related to: optics/photronics: 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; subsurface sensing and imaging.  
**Admission deadlines:** For full aid consideration, 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  
**Mailing address:** Boston University, 8 St Mary's St., Room 936, Boston MA 02215-2421 USA

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**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/photronics students currently enrolled in a related program:** 15  
**Number of students in optics/photronics related course work:** 75  
**Number of optics/photronics related courses offered in this program:** 12  
**Optics/photronics 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/photronics:** Experimental/theoretical work in fiber lasers, fiber-optic communications/devices, solid-state lasers, optoelectronic devices; nonlinear/quantum optics, solitons, nonlinear waves, ultrafast 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.  
**Year program was founded:** 1973  
**Contact:** Barbara Sullivan, Senior Administrative Coordinator  
**Email:** bsullivan@jhu.edu  
**Website:** http://www.ece.jhu.edu  
**Mailing address:** Johns Hopkins Univ., 105 Barton Hall, Dept. of ECE, 3400 N. Charles St., Baltimore MD 21218 USA
Bridgewater State University
Bridgewater, Massachusetts USA

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

undergraduate/apply
Contact: Thomas Kling
Email: tkling@bridgew.edu
Website: https://www.bridgew.edu/department/physics
Mailing address: 131 Summer St, Bridgewater MA 02325 USA

Northeastern University
Boston, Massachusetts USA

Students interested in optics can major in Electrical and Computer Engineering, Bioengineering, Mechanical Engineering, or Physics. All departments offer BS, MS, and Ph.D. programs.

Name of department: Electrical and Computer Engineering
Number of core optics/ photonics students currently enrolled in a related program: 18
Number of students in optics/ photonics related course work: 20
Optics/ photonics related programs/degrees offered: Degrees related to optics: BS in Electrical Engineering, BS in Electrical and Computer Engineering, MS in Bioengineering, BS in Mechanical Engineering, BS in Physics, MS in Electrical and Computer Engineering, MS in Bioengineering, BS in Mechanical Engineering, MS in Physics, PhD in Electrical Engineering, PhD in Bioengineering, PhD in Mechanical Engineering, PhD in Physics

Type/Description of disciplines/ program tracks offered: Electrical engineering; Biomedical optics
Academic and research specialties related to: optics/ photonics: Biomedical imaging, Photomedicine, optical sensors for energy, environment and infrastructure, optical properties of materials, multimodal sensing, inverse problems.

Accreditation Organization: ABET
Admission deadlines: Application deadline for Fall. January 15 for students seeking financial support. April 15, otherwise.
Year program was founded: 1974
Contact: Jesse Marsh, Graduate Coordinator
Email: jmarsh@northeastern.edu
Website: http://www.ece.neu.edu/groups/osi/nuopticsed.html
Mailing address: 440 Dana Building, Northeastern Univ, 360 Huntington Ave, Boston MA 02115 USA

Stonehill College
Easton, Massachusetts USA

Bachelor’s degree aims to prepare student for engineering program or graduate school in science. Certificate aims at rapid preparation for employment in optics and photonics-related industries.

Name of department: Physics and Astronomy
Number of core optics/ photonics students currently enrolled in a related program: 15
Number of students in optics/ photonics related course work: 20
Optics/ photonics related programs/degrees offered: Certification in Advanced Manufacturing and Integrated Photonics: 15-month program aims to train technicians for photonics-related industries. Photonics major and minor, offered through physics department, aims to prepare student for careers in science and engineering.

Type/Description of disciplines/ program tracks offered: Physics; Optics; Photonics
Accreditation Organization: Stonehill College is accredited by New England Commission of Higher Education
Admission deadlines: January 15 for major, April or until seats filled for Certificate

Tufts University
Medford, Massachusetts USA

Applications of optics to biomedical engineering, especially sensing systems. Research and coursework 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
Optics/ photonics related programs/degrees offered: Certification: Biomedical Engineering, BS in Optical Engineering, BS in Bioengineering, MS in Biomedical Sciences, MS in Master of Science: with or without thesis. PhD - Doctor of Philosophy

Type/Description of disciplines/ program tracks offered: Physics; Electrical engineering; Bioengineering; Biomedical optics
Academic and research specialties related to: optics/ photonics: NIR biomedical imaging, optical tweezers, optical diagnostics, in vivo flow cytometry; biopolymers as optical materials, photo-acoustic imaging

Year program was founded: 2002
Contact: Mark Cronin-Golomb, Professor
Email: Mark.Cronin-Golomb@tufts.edu
Website: http://engineering.tufts.edu/bme/
Mailing address: Tufts Univ., Biomedical Engineering, 4 Colby Street, Medford MA 02155 USA

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
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.

Year program was founded: 1930
Contact: Christopher T. Middlebrook, Associate Professor
Email: ctmiddle@mtu.edu
Undergraduate/Graduate Programs

Website: http://www.ece.mtu.edu/
Mailing address: Michigan Technological Univ., EERC Bldg. 121, 1400 Townsend Dr., Houghton MI 49931 USA

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
Number of 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: mvannette@svsu.edu
Website: http://www.svsu.edu/physics
Mailing address: Department of Physics, Saginaw Valley State University, 7400 Bay Road, University Center MI 48710 USA

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: 41
Number of students in optics/photonics related course work: 200
Number of 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.

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: cmsj@umich.edu
Website: http://eecs.umich.edu
Mailing address: Univ. of Michigan, Optical Science Lab, 3301 EECS, 1301 Beal Ave., Ann Arbor Michigan MI 48109-2122 USA

MINNESOTA
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
Number of optics/photonics related courses offered in this program: 7
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.stcloudstate.edu/physics
Mailing address: St. Cloud State Univ., WSB 324, 720 4th Ave. S., St. Cloud MN 56301 USA

MISSOURI
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
Number of 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://aplol.mst.edu
Mailing address: Missouri University of Science and Technology, 121 EECH, 301 W. 18th St., Rolla MO 65409-0040 USA

MONTANA
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
Number of optics/photonics related courses offered in this program: 16
Optics/photonics related programs/degrees offered: Associate degree(s): Photonics and Laser Technology. Bachelor of Science degree in Electrical Engineering, Computer Engineering, Physics, Chemistry, or Mathematics, with significant coursework and research opportunities in optics and photonics; MS in Optics and Photonics, Electrical Engineering,
NEW JERSEY

New Jersey Institute of Technology
Newark, New Jersey USA

Flexible curricula which extends from material science and engineering, applied physics and computer and electrical engineering; Optical Science and Engineering Program with a $1,000,000 education lab.

Name of department: Electrical and Computer Engineering

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

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

Optics/photonics related courses offered in this program: 15

Type/Description of disciplines/program tracks offered: Physics; Electrical and Computer Engineering

Academic and research specialties related to: optics/photonics: Interdisciplinary program which combines: material and device fabrication, characterization at THz frequencies, far and near IR, visible and UV using long and ultra short pulses.

Year program was founded: 1990
Contact: H. Grebel, Professor
Email: grebel@njit.edu
Website: http://www.njit.edu
Mailing address: New Jersey Institute of Technology, Electronic Imaging Center, Electrical and Computer Engineering Department, Newark NJ 07102-1982 USA

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: Physics; Optical engineering; Electrical engineering; Optics; Photonics - AAS Photonics and Laser Technology; BS EE with Optics and Photonics minor, MS Optics and Photonics, PhD in Electrical Engineering or Physics or Chemistry with emphasis in Optics and Photonics; Biomedical optics; Fiber optics. A wide variety of optics and photonics coursework and research is offered at Montana State University through the departments of Electrical and Computer Engineering, Physics, and Chemistry.

Academic and research specialties related to: optics/photonics: Optical remote sensing, lidar, polarimetry, radiometry, optical communications, MEMS device and system design and fabrication, nano-photonics, laser physics, diode and cw Raman lasers, ultrastable lasers, spectral hole burning, spatial-spectral holography, spectroscopy, optical materials, image analysis, Space optical systems and solar physics, space and atmospheric science with optical and infrared sensors, computational adaptive optics.

Admission deadlines: The ECE, Physics, and Chemistry departments each have unique deadlines that can be found through our webpage (www.optics.montana.edu).

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

New Mexico Institute of Mining and Technology
Socorro, New Mexico USA

The Optical Science and Engineering program at New Mexico Tech is offered as a minor degree that can be taken with nearly all of our BS programs in the Physical Sciences. The program is administered through the co-operation of the Electrical Engineering, Physics and Materials Engineering Departments. In the Electrical Engineering degree program students are able to apply their understanding of electromagnetic, optical, and electronic systems. This leads to the students developing an understanding of optics combined with the hands-on skills derived from their major program. In the final year of their undergraduate level studies the students participate in a year-long capstone project course where several optics projects are often available for selection. The graduate degree program is structured around a core group of courses in Electrical Engineering. Specialized courses in optics and other major topic areas are coupled with research projects that provide the key to the success of the program.

Name of department: Electrical Engineering

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: 10

NEW MEXICO

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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 Materi

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

Admission deadlines: See http://gradschool.nmsu.edu/ for application information

Year program was founded: 1980
Contact: David Voelz, Professor of Electrical and Computer Engineering
Email: davvoelz@nmsu.edu
Website: http://optics.nmsu.edu
Mailing address: The Klipsch School of Electrical and Computer Engineering, New Mexico State University, Box 30001, MSC 3-0, Las Cruces NM 88003-8001 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 gyro, 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, student-related mandatory and elective courses are offered regularly.

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 (ECE); 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: 1985
Contact: Doris Williams, OSE Sr. Academic Advisor, Dr. Mansoor Sheik-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, 1313 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

Binghamton 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: 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, MS 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

Photons is the focal 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 traditional 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

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 gain further understanding of the optical properties of novel materials. Another area of optics research is theory, fabrication, and experimental assessment of photonic 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 wavefront shaping using spatial light modulators is applied to problems such as control and experimental 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

Academic and research specialties related to optics/photonics:

Admission deadlines: Undergraduate Application Due Dates: Early Decision I 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: wilkel@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
UNDERGRADUATE/GRADUATE PROGRAMS

Rochester Institute of Technology, SPIE, OSA Student Chapter

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

Optics/photronics related programs/degrees offered: BS - Microelectronic Engineering; MS - Microelectronic Engineering; PhD - Microsystems Engineering

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

Accreditation Program: Microelectronic Engineering

Accreditation Organization: ABET

Year program was founded: 1982

Contact: Dr. Dale E. Ewbank

Website: http://www.rit.edu

Mailing address: RIT, Electrical & Microelectronic Engineering Dept, ENG-2551, 79 Lomb Memorial Dr, Rochester NY 14623 USA

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 towards 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 optics/photronics related courses offered in this program: 7

Optics/photronics related programs/degrees offered: BS BE; MS ME; PhD

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

Academic and research specialties related to optics/photons: 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 school Web site at https://www.ccny.cuny.edu/academic_calendar.html

Year program was founded: 1972

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

Email: ralfano@ccny.cuny.edu

Website: https://www.ccny.cuny.edu/
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; ultrarapid optics; semiconductor optoelectronics; nonlinear optics; quantum optics; optical engineering; image science; biomedical optics; 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

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 FIP’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 nucleus 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; scale; optical materials
Admission deadlines: Deadline information is found at http://www.gradschool.duke.edu/. For current expense details: http://www.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 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; Electrical engineering; Optics; Photonics; Fiber optics
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

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 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 system 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
**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

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

Email: nccassid@bgusu.edu

Website: http://www.bgsu.edu/departments/photochrome

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

Kent State University - Center for Photochemical Sciences

The graduate Chemical Physics Interdisciplinary Program at KSU offers a unique program of study focused on liquid crystals which leads to an MS or PhD 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/cpip/index.php?content=lcengineering&title=Liquid+Crystal+Engineering

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 birefractance LCs, 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/cpip/

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

Ohio State University - Center for Photochemical Sciences

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 photonics; MSECE; PhD 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, OEICs, 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 Dreebe Lab, 2015 Neil Ave, Columbus OH 43210 USA

University of Dayton - Center for Photochemical Sciences

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 (MS) 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/photonics: Nano-photonics, 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, photorefractives, 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-optic systems, optoelectronic materials, ladar, computational electromagnetics, intense femtosecond pulse propagation.

Admission deadlines: Open enrollment
Year program was founded: 1983
Contact: Dr. Partha P. Banerjee, Director
Email: pbabanerjee1@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

OKLAHOMA

Oklahoma State University
Stillwater, Oklahoma USA

Three graduate degree programs are offered relating to Photonics: a standalone, multidisciplinary Photonics PhD program, as well as MS-level specializations of the Physics MS or Electrical and Computer Engineering MS degree programs, respectively. Additionally, selected faculty from the Physics Dept. and from the Microbiology Dept. are active in the biophotonics track, offering course work and research projects in their respective disciplines. These multidisciplinary programs involve faculty and coursework primarily from two departments: Physics and Electrical Engineering; students take courses in their home department as well as additional coursework from the other department. Photonics laboratory courses taught as tutorials offer an introduction to the research specialties of the Photonics faculty and cover a wide range of photonics techniques.

Name of department: Physics
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: 23
Optics/photonics related programs/degrees offered: BS in Physics, MS in Electrical Engineering, MS in Physics, Optics & Photonics, PhD in Electrical Engineering.

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

Academic and research specialties related to optics/photonics: Photonics research includes quantum optics and quantum information theory, nonlinear dynamics, Bose-Einstein condensates (BECs) and ultracold atomic systems, micromaser optics, nanomaterial physics and chemistry, biosensors, terahertz spectroscopy, ultrafast lasers, and metamaterials.

Admission deadlines: Submit all application materials online, specifying the appropriate program (all students in Physics enter the Physics PhD or Photonics PhD program and earn the MS en route), and, for the Photonics PhD, home department (Physics OR EE but not both; based on applicant’s background) by Feb. 1st to assure full consideration for financial support in the form of an Assistantship in the home department. Application received after this date may also considered, resources permitting.

Year program was founded: 2000
Contact: Prof. A. T. Rosenberger, Physics/Photonics Graduate Coordinator
Email: physics.grad.coordinator@okstate.edu
Website: https://physics.okstate.edu/student-resources/graduate/photonics
Mailing address: Department of Physics, Oklahoma State University, Stillwater OK 74078-3072 USA

University of Central Oklahoma
Edmond, Oklahoma USA

Name of department: Engineering and Physics
Optics/photonics related programs/degrees offered: BS in Engineering Physics (Electrical systems, Mechanical systems, or Physics). MS in Engineering Physics

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/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: 6
Optics/photonics 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/photonics: Fiber optics and fiber optics systems, low and high power laser systems and laser physics, optical detection, optical testing, Fourier optics, 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/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: 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/photonics: 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

University of Dayton

Optics at Dayton is a cross-disciplinary program within the School of Electrical Engineering and Computer Science; Departments of Physics and Chemistry.

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

Academic and research specialties related to optics/photonics: Physical optics, optical electronics, guided wave optics, nonlinear optics, 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/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: 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/photonics: 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
University of Oregon
Eugene, Oregon USA

The Oregon Center for Optical, Molecular, and Quantum Science encompasses research in basic and applied aspects of optics in physics and physical chemistry. Members of the OMQ are faculty in the Physics and Chemistry departments. Associate Members are from these departments as well as institutions outside of the University of Oregon. Students—undergraduate, masters and PhD—are involved in all aspects of research at the OMQ. Students wishing to participate in optics-related research in the OMQ enter the university through one of the academic departments, typically Physics or Chemistry, where they pursue course work according to the standards of those departments.

- Quantum optics • Condensed matter physics • Theoretical quantum chaos and semiclassical physics • Optical devices • Ultracold atoms and atom optics • Fluorescence fluctuation and ultrafast laser • spectroscopy
- Quantum information • Quantum control • Semiconductor optical physics • Nonlinear optics and lasers • Biophysics. OMQ, the Department of Chemistry, the Department of Physics and the Materials Science Institute all host visiting scholars from around the nation and the world. Guest speakers present their latest findings at weekly seminars. The OMQ seminar room, at the heart of the center, hosts both OMQ and Physical Chemistry speakers. The Physics Colloquium is presented every Thursday in the 100 Willamette auditorium. Recent presentations have included world-class researchers from major universities and US and foreign national laboratories.

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: Jorgie 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-photronics, bio-photronics, 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-photronics, optoelectronics, nonlinear optics, electro-optics, fiber optics, liquid crystals and nonlinear optical materials, bio-photons, 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: ickl@psu.edu
Website: http://www.eecs.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: Photonics 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 Biomedical 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.

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-photronics, optoelectronics, nonlinear optics, electro-optics, fiber optics, liquid crystals and nonlinear optical materials, bio-photons, 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: ickl@psu.edu
Website: http://www.eecs.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: Photonics 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 Biomedical 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.
**Texas A&M University**

**College Station, Texas USA**

Department of Biomedical Engineering that includes: Biomedical Optics, Sensing and Imaging, Biomechanics, and Biomaterials

**Name of department:** Biomedical Engineering

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

**Number of students in optics/photons related course work:** 30

**Type/Description of disciplines/program tracks offered:** Biomedical optics; Biomedical Engineering

**Admission deadlines:** Undergraduates: visit http://admissions.tamu.edu/; Graduates: visit http://www.physics.tamu.edu/academics/grad_admissions.html

**Year program was founded:** 1972

**Contact:** Dr. Mike McShane, Interim Department Head, Biomedical Engineering

**Email:** mcshane@tamu.edu

**Website:** http://engineering.tamu.edu/biomedical

**Mailing address:** Texas A&M University, Dept of Materials Science and Engineering, MS 3120, Emerging Technologies Bldg., College Station TX 77843-3120 USA

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**University of Houston**

**Houston, Texas USA**

Engineering Technology (ET) is the profession in which knowledge of the applied mathematical and natural sciences gained by higher education, experience, and practice is devoted to the application of engineering principles and the implementation of technological advances for the benefit of humanity. Engineering Technology education for the professional focuses primarily on analyzing, applying, implementing and improving existing and emerging technologies and is aimed at preparing graduates for the practice of engineering that is close to the product improvement, manufacturing, and engineering operational functions.

**Name of department:** Engineering Technology

**Type/Description of disciplines/program tracks offered:** Biomedical Optics, Tissue Optics, Optical Biosensing, Optical Biomedical Imaging, Optical Coherence Tomography, Optical Nanotechnology, Quantum Dots, Nonlinear Optical Imaging, Fluorescence, Polarmetry, Tissue Microscopy

**Year program was founded:** 1972

**Contact:** Dr. Driss Benhaddou, Assistant Professor

**Email:** dbenhaddou@uh.edu

**Website:** http://www.tech.uh.edu

**Mailing address:** Univ. of Houston, Engineering Technology Dept., 4800 Calhoun Rd., Houston TX 77004 USA

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**University of Texas at El Paso**

**El Paso, Texas USA**

The Electrical and Computer Engineering Department offers a BS in Electrical Engineering, and Master and Ph.D. programs in Electrical and Computer Engineering, and a Graduate Certificate in Electric Power and Energy Systems. Our Vision is to provide programs of the highest quality to produce world class engineers who can address the challenges of the millennium.

**Name of department:** Electrical and Computer Engineering

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

**Accreditation Program:** The BS in EE program is accredited by ABET.

**Accreditation Organization:** Accreditation Board of Engineering and Technology

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**Baylor University**

**Waco, Texas USA**

**Type/Description of disciplines/program tracks offered:** Mathematics, Computer Science, Mechanical and Electrical Engineering

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

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

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

**Admission deadlines:** February 15th

**Year program was founded:** 1979

**Contact:** Dr. Jonathan Hu, Associate Professor

**Email:** jonathan_hu@baylor.edu

**Website:** http://www.baylor.edu

**Mailing address:** Baylor Univ., E&C Dept, ECS 301D, One Bear Place #97356, Waco TX 76798-7356 USA

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**Texas A&M University**

**College Station, Texas USA**

The basis of the extremely successful research of the quantum optics group has established long-term research collaborations with other departments of the University (Chemistry, Mathematics, Computer Science, Mechanical and Electrical Engineering) and with leading research centers around the world both in the US (such as NIST, Boulder) and abroad (Lebedev Physical Institute, Moscow, and Max-Planck Institute for Quantum Optics, Munich). Due to this international climate in a highly productive environment, our graduate and post-doctoral students are extremely successful. They hold positions in the optical, semiconductor, and photonics industries, in management and consulting, in R&D laboratories, and as faculty at national and international universities. Most recent examples of the highly productive synergism are laserings without inversion, slow light and non-linear spectroscopy in atomic vapors, as well as experiments on the foundations of quantum mechanics.

**Name of department:** Department of Physics and Astronomy

**Type/Description of disciplines/program tracks offered:** Physics; Electrical Engineering; Mechanical and Electrical Engineering

**Admission deadlines:** Undergraduates: visit http://admissions.tamu.edu/; Graduates: visit http://www.physics.tamu.edu/academics/grad_admissions.html

**Year program was founded:** 1972

**Contact:** Sherree Kessler, Senior Academic Advisor

**Email:** skessler@physics.tamu.edu

**Website:** http://physics.tamu.edu/

**Mailing address:** 4242 TAMU, College Station TX 77843-4242 USA

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**Undergraduate/Graduate Programs**

**Optics/photonics related programs/degrees offered:** Physics, Electrical engineering, Biomedical optics, Mechanical Engineering, Chemical and Biomedical Engineering, Chemistry

**Accreditation Program:** The Engineering programs are ABET accredited

**Contact:** Sherree Kessler, Senior Academic Advisor

**Website:** http://www.physics.tamu.edu/
UNDERGRADUATE/GRADUATE PROGRAMS

Admission deadlines: Undergraduate admissions are on a rolling basis via https://www.applytexas.org/. Graduate (MS & PhD) programs priority admissions are October 1 for Spring, and March 1 for Fall. http://www.utep.edu/graduate/apply-now/apply-now.html
Year program was founded: 1949
Contact: Dr. Miguel Velez-Reyes, Chair, ECE Department
Email: mvledezreyes@utep.edu
Website: http://ece.utep.edu
Mailing address: Univ. of Texas at El Paso, Dept. of Electrical & Computer Engineering, 500 W. University Ave., El Paso TX 79968 USA

UTAH

Brigham Young University
Provo, Utah USA

Name of department: Physics and Astronomy
Number of core optics/photonics students currently enrolled in a related program: 50
Number of students in optics/photonics related course work: 70
Number of optics/photonics related courses offered in this program: 9
Optics/photonics related programs/degrees offered: BS Physics & Astronomy; MS Physics & Astronomy; PhD Physics & Astronomy
Type/Description of disciplines/program tracks offered: Physics and research specialities related to optics/photonics: See faculty. BYU has a strong tradition of doing undergraduate research and many optics students are undergraduates. We have graduate students active in various optical fields.
Admission deadlines: Jan. 15 for graduate, additional information contact Prof. Eric Hirschmann ehirsch@physics.byu.edu (late applications can be considered in some cases); Undergraduates are admitted 4 times a year. See: https://admissions.byu.edu/application-deadlines
Year program was founded: 1940
Contact: Prof. David D. Allred, Professor
Email: allred@byu.edu
Website: http://www.physics.byu.edu/
Mailing address: Brigham Young Univ., Physics & Astronomy Dept., N283 Eyring Science Ctr, Provo UT 84602 USA

Utah Valley University
Orem, Utah 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: 20
Optics/photonics related programs/degrees offered: BS - Physical Science; BS - Physics
Type/Description of disciplines/program tracks offered: Physics; Optics; Photonic; Biomedical optics
Contact: Dustin Shipp
Email: Dustin.Shipp@uvu.edu
Website: https://www.uvu.edu/physics/
Mailing address: 500 W University Pkwy, Orem UT 84058 USA

WASHINGTON

University of Washington
Seattle, Washington USA

The University of Washington provides an interdisciplinary environment for research and education in Optics and Photonics. Various labs in UW work on new photonic devices and systems, explore new optoelectronic materials, and study new optical sciences. The applications range from communication, computation, sensing, energy, display, to biological study and biomedical imaging. Detailed description can be found from the website of individual labs.
- Nano Optoelectronic Integrated System Engineering Lab (http://www.ee.washington.edu/research/amlab/)
- Optical Spintronics and Sensing Lab (http://sharepoint.washington.edu/phys/research/optospinlab/Pages/default.aspx)
- Photonics Lab (http://www.ee.washington.edu/research/photonicslab/)
- Nanoscale Optoelectronics Lab (http://depts.washington.edu/xulab/)
- Biophotonics and Imaging Lab (http://depts.washington.edu/wangast/)
- Human Photonics Lab (http://depts.washington.edu/hplab/)
- Jen Research Group on Photonics, Optoelectronics, Biosensing & Nanoscience (http://depts.washington.edu/jengroup/)
- Microtechnology Lab (http://depts.washington.edu/mictech/home/)
- Nanoscale Optoelectronic Materials (http://faculty.washington.edu/peterpz/wordpress/)
- Label-free Biosensors (http://faculty.washington.edu/dratner/)
- Trapped Ion Quantum Computing Group (http://depts.washington.edu/acomp/)
- Ultracold Atoms Group (http://faculty.washington.edu/deepg/)
- Organic Optoelectronic Polymers (http://faculty.washington.edu/luscombe/)
- Ultrafast Spectroscopy (https://sites.google.com/a/uw.edu/khalilgroup/)
- Theory of Light Manipulation on the Nanoscale (http://faculty.washington.edu/masiello/Masiello_Group_Website/Home.html)
- Super-resolution Fluorescence Microscopy (https://sites.google.com/a/uw.edu/the-vaughan-group/)
- Physical Chemistry of Nanostructured Materials (http://depts.washington.edu/gingerl/index.php)
- Functional Inorganic Materials (http://depts.washington.edu/gmrg/)

Name of department: Electrical Engineering, Physics, Mechanical Engineering, Bioengineering, Material Science and Engineering, Chemistry
Number of core optics/photonics students currently enrolled in a related program: 100
Number of students in optics/photonics related course work: 600
Number of optics/photonics 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
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 courses offered in this program: 3
Optics/photonics related programs/degrees offered: BS in Physics; M.S. in Physics; Ph.D. in Physics

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
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