

EUROPEAN MASTER OF SCIENCE IN PHOTONICS

Organised jointly by Ghent University and Vrije Universiteit Brussel

120 ECTS CREDITS – LANGUAGE: ENGLISH – DEGREE: MASTER OF SCIENCE

COURSE CONTENT

Photonics is now widely recognised as a major innovation enabling discipline for the 21st century. It can be defined as the field of science and technology where the fundamental properties of light and its interaction with matter are studied and applied.

For several decades photonics has been penetrating in more and more applications and household appliances. At the moment, photonics is a discipline of key importance in industrial sectors such as tele- and data communication, display and camera industry, biotechnology, solar energy, medical instrumentation, laser material processing, etc.

The European Master of Science in Photonics is a multidisciplinary programme covering basic physics, material technologies, electronics and applications in different fields. Students will be trained to become specialists in the field. A key feature of this programme is student mobility within Europe: in the second year of the programme either courses, master's dissertation or a long internship have to be completed at a European partner institute.

COURSE STRUCTURE

The European Master of Science in Photonics is a two year (120 credits) English taught programme, based on four pillars: a strong backbone of core photonics, specialisation in a broad spectrum of advanced photonics, a secondary specialisation in a related field (telecom, biomedical engineering etc.) and a master's dissertation.

During the first year, the focus is on courses covering the fundamentals of photonics: light propagation in complex media, basic understanding of the properties of optical materials and lasers. Thereby both theoretical knowledge as well as practical skills are addressed.

During the second year there is room for advanced photonics electives, multidisciplinary courses and the master's dissertation. At least part of this second year has to be spent at a European partner institute.

To facilitate this, the programme distinguishes 5 tracks:

- Track 1: Courses (30 credits) are taken at a European partner institute during first semester. Master's dissertation (30 credits) is carried out at UGent or VUB during second semester.
- Track 2: Courses (30 credits) are taken at VUB and/or UGent during first semester. Master's dissertation (30 credits) is carried out at a European partner institute during second semester.
- Track 3: Courses (30 credits) AND master's dissertation (30 credits) are carried out at a European partner institute during first and second semester.
- Track 4: The student carries out a long internship (>10 weeks, 10 credits) at a company or research institute abroad. Courses (20 credits) and master's dissertation (30 credits) are taken at VUB and/or UGent during first and second semester.
- Track 5: This track is only accessible for students who followed their first master year abroad and who follow the European Master of Science in Photonics programme in the context of a collaboration agreement (e.g. a double degree agreement). Students in this track can take all their courses and master's dissertation at UGent and/or VUB.

About the partner institutes:

The programme has set up collaborations with a number of European universities and research institutes offering high quality programmes in photonics. Some of these partner institutes offer a full programme (courses + dissertation) while others offer only courses or only a dissertation. For the partner institutes offering courses the programme board has preselected a number of specialised photonics courses and multi-disciplinary courses from which the student can easily construct a programme fulfilling the requirements. The partner institutes are geographically spread over Europe and have their own specific profile allowing the student to specialise in virtually any subdiscipline of photonics. More details about the partner institutes can be found on the website of the programme (www.masterphotonics.be).

At the end the master, a summer symposium is organised, bringing together all students at a single location. At this symposium the second master students present their master's dissertation and lectures will be held by leading international experts in photonics.

> Master's dissertation

The master's dissertation is an original work about a specific topic in photonics. In general it consists of a literature study combined with practical work in the form of simulation, modelling, fabrication and/or measurements of photonic devices and/or systems. The completion of the master's dissertation is a requirement to obtain the degree of master of science in photonics engineering.

CAREER PERSPECTIVE

The aim of this master's programme is to form engineers and scientists with solid basic knowledge in the field of photonics and with the skills to apply this knowledge to the design, realisation and the management of photonic systems for a broad range of application domains.

Furthermore the students will have the opportunity to broaden their knowledge and skills in other domains such as ICT, biosciences, physics and chemistry of materials, industrial management etc. Therefore graduates are expected to be offered a broad range of future opportunities, including: research in high technology companies, in particular photonics related companies; research in academic laboratories and research institutes (possibly in PhD context); development of new photonic products in industry; technical support in a company for its products or services; technical marketing and sales.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

Rechtstreeks:

- Ba ingenieurswetenschappen: elektrotechniek
 - Ba ingenieurswetenschappen: toegepaste natuurkunde
 - Ba ingenieurswetenschappen: afstudeerrichting elektrotechniek
 - Ba ingenieurswetenschappen, afstudeerrichting: elektronica en informatietechnologie
 - Ma ingenieurswetenschappen (alle, met beroepstitel burgerlijk ingenieur - uitz. Ma ingenieurswetenschappen: architectuur)
 - Ma in Engineering (alle, met beroepstitel burgerlijk ingenieur - uitz. Ma in Engineering: Architecture)
 - Ma bio-ingenieurswetenschappen (alle, met beroepstitel bio-ingenieur)
 - Ma fysica en sterrenkunde
 - Ma fysica
 - Ma of Materials Engineering
 - Ma of Nuclear Engineering
 - Master of Nanophysics
- opleiding(en) oude structuur:*
- burgerlijk ingenieur (alle, uitz. burg.ir.-architect)
 - bio-ingenieur (alle)
 - licentiaat natuurkunde

Rechtstreeks: (naar brugprogramma - 120 studiepunten)

- Ma chemie
 - Ma nanowetenschappen en de nanotechnologie
 - Ma biochemie en de biotechnologie
 - Ma biochemie
 - Ma in Chemistry
 - Ma in Biochemistry and Biotechnology
 - Ma industriële wetenschappen:
 - elektronica-ICT (zonder afstudeerrichting)
 - elektronica-ICT, afstudeerrichting ICT
 - elektronica-ICT, afstudeerrichting elektronica
 - elektrotechniek
 - energie
 - chemie
 - elektromechanica
 - kunststofverwerking
 - industriële kunststofverwerking
- opleiding(en) oude structuur:*
- licentiaat scheikunde
 - licentiaat biochemie
 - licentiaat biotechnologie
 - industrieel ingenieur elektronica
 - industrieel ingenieur chemie
 - industrieel ingenieur elektromechanica

Via voorbereidingsprogramma: (max. 90 studiepunten)

- andere Ba ingenieurswetenschappen (uitz. architectuur)
- Ba bio-ingenieurswetenschappen
- Ba fysica en sterrenkunde
- Ba fysica
- Ba chemie
- Ba biochemie en biotechnologie
- Ba biochemie
- Ba industriële wetenschappen elektronica-ICT
- Ba industriële wetenschappen, afstudeerrichting: elektronica-ICT
- Ba ingenieurswetenschappen (KMS)

TAAL

Je voldoet aan de taalvoorwaarden op basis van je Vlaams diploma.

PRAKTISCHE INFORMATIE

Studieprogramma:

<https://studiegids.ugent.be>

> faculteiten > opleidingstypes > ga naar de opleiding van je keuze

Alternatieve trajecten

Meer informatie over voorbereidings- en brugprogramma's op www.ugent.be/ea

volg > alles voor toekomstige studenten > voor wie al een diploma heeft

Infomomenten

Masterbeurs

www.ugent.be/masterbeurs

Opleidingsgebonden infosessie

19 april 2017 - 17 u.-19 u. doorlopend, Campus Ufo, Ufo,
Sint-Pietersnieuwstraat 33 - Foyer
www.ugent.be/nl/studeren/masteropleidingen

Contact

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Meer info

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ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Foreign students need to be in possession of a bachelor's degree in Electrical engineering, in (Applied) Physics, Material Science or an equivalent of this to be admitted to the programme.

Students in possession of another bachelor's degree might need to follow a preparatory programme. The educational board will make the final decision whether to accept the application or not.

LANGUAGE

More information regarding the required knowledge of English:

www.ugent.be/specificlanguag

See also: www.masterphotonics.be

PRACTICAL INFORMATION

Study programme

www.ugent.be/coursecatalogue

> by Faculty > Programme types > select your programme

Application deadline for international degree students

The International master's programmes have a specific application procedure. See: www.masterphotonics.be

Enrolling institution

Ghent University

Tuition fee

More information is to be found on:

www.ugent.be/tuitionfee

Contact

Faculty of Engineering and Architecture

International Relations Officer – Degree students

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