

ENROLMENT REQUIREMENTS MASTER OF PHOTONICS ENGINEERING 2024-2025

In order to be eligible to take a course, you usually have to meet certain enrolment requirements. These requirements can be both pre- and corequisites. The requirement may be blocking or advisory in nature. At the VUB, there are 4 types of enrolment requirements:

1. Binding prerequisite
2. Advisory prerequisite
3. Binding corequisite
4. Advisory corequisite

Below you will find the definition of the different types of enrolment requirements. Check out the specific enrolment requirements for your programme on the next page.

BINDING PREREQUISITE

Due to certain risks and safety issues, you can only enrol in course X if you have passed, been exempted from or deliberated for course Y. It is not possible to register for courses if you do not meet the binding prerequisite.

ADVISORY PREREQUISITE

The curriculum council strongly recommends that you only enrol in course X if you have taken course Y. Although this prerequisite is not binding and it is possible to register for course X without having taken course Y, it is your own responsibility not to follow the programme's advice. This means that you do not have the required competencies.

BINDING COREQUISITE

You can only enrol in course X if you are also simultaneously registered for (or have already passed/been exempted from) course Y. In order to achieve the learning results of course X in a safe/good way, a registration for course Y is necessary. It is not possible to register for courses if you do not meet the binding corequisite.

ADVISORY COREQUISITE

The curriculum council strongly recommends that you only enrol in course X if you are simultaneously registered for (or have already passed/been exempted from) course Y. Although this corequisite is not binding and it is possible to register for course X without simultaneously taking course Y, it is your own responsibility not to follow the programme's advice. This means that you do not have the required competencies.

HAVE A LOOK AT THE ENROLMENT REQUIREMENTS FOR YOUR PROGRAMME



Enrolment requirements Master of Photonics Engineering (120 ECTS-credits) 2023-2024

YEAR 1 (60 ECTS)							
Course title	Sem	ECTS	Binding prerequisite	Advisory prerequisite	Binding corequisite	Advisory corequisite	Additional requirements
Compulsory common courses (52 ECTS)							
Business management and entrepreneurship	1	3					
Lasers	1	4					
Optical materials	1	6					
Photonics	1	4					
Mathematics in photonics	1	4					
Microphotonics	1	6					
Laboratories in photonics research	2	6					
Business aspects of technology: micro-electronics and photonics	2	3					
Optical communication systems	2	6					
Sensors, actuators and electronic microsystems	2	6					
Physics of semiconductor technologies and devices	2	4					
Advanced elective courses (8 ECTS)							
Introduction to quantum physics for electrical engineering	1	4					
Optical sensors	1	4					
Biophotonics	1	4					
Display technology	1	4					
High speed photonics components	1	4					
Non-linear optics	1	4					
Optical spectroscopy of materials	1	4					
Design of refractive and diffractive optical imaging systems	1	4					
Optical design of non-imaging systems with ray-tracing software	1	4					
Lighting technology	2	4					
Photonic integrated circuits	2	4					
Quantum optics	2	4					
Photovoltaic energy conversion	2	4					
Micro- and nanophotonic semiconductor devices	2	4					
Machine learning in Photonics	2	4					
Technological processes for photonics and electronics: laboratory	1+2	4					
Research in photonics	1 or 2	6					

YEAR 2 (60 ECTS)							
Course title	Sem	ECTS	Binding prerequisite	Advisory prerequisite	Binding corequisite	Advisory corequisite	Additional requirements
Compulsory common courses (34 ECTS)							
Recent trends in photonics	1	4					
Master thesis	1+2	30					Only for students who are able to graduate
Optional internship (5 or 10 ECTS)							
Short internship in photonics	1 or 2	5		Photonics			
Long internships in photonics	1 or 2	10		Photonics			
Advanced elective courses (8 or 4 ECTS)							
Introduction to quantum physics for electrical engineering	1	4					
Optical sensors	1	4					
Biophotonics	1	4					
Display technology	1	4					
High speed photonics components	1	4					
Non-linear optics	1	4					
Optical spectroscopy of materials	1	4					
Design of refractive and diffractive optical imaging systems	1	4					
Optical design of non-imaging systems with ray-tracing software	1	4					
Lighting technology	2	4					
Photonic integrated circuits	2	4					
Quantum optics	2	4					
Photovoltaic energy conversion	2	4					
Micro- and nanophotonic semiconductor devices	2	4					
Technological processes for photonics ad electronics: laboratory	1+2	4					
Research in photonics	1 or 2	6					
Multidisciplinary elective courses (18 or 17 or 12 ECTS)							
Module modeling, measuring and control systems							
Optimization-based control design	1	4					
Selected topics in nonlinear systems identification	1	3					
High-frequency electronics and antennas	1	6					
Advanced measurement and data driven modeling	1	4					
Model-based and data driven fault detection and isolation	2	3					
Identification of dynamical systems	1 or 2	4					

Module electronics and information technology							
Computer vision	1	4					
Mobile and wireless networks	1	4					
Image and video technology	1	3					
Voice, image, coding, media and systems	2	6					
Wireless communication channels	2	4					
Digital communications	2	4					
Machine learning and big data processing	2	5					
Module physics and materials							
Computational physics	1	6					
Quantum field theory	1	6					
General relativity	1	6					
Physics and chemistry of nanostructures	2	6					
Module life sciences							
Modelling of physiological systems	1	6					
From genome to organism	1	6					
Quantitative cell biology	1	3					
Medical imaging	1	6					
Biomechanics	2	6					
Module business engineering							
Supply chain management	2	6					
IP management and technology transfer	2	5					
Innovation strategy	2	5					
Marketing	2	5					
Technological business development project - EUTOPIA learning unit	1+2	6					
Technological business development project - EUTOPIA learning unit	1+2	3					