



## LIGHT ENGINEERING

<b>Programme type</b>	<b>Bachelor's studies (university)</b>
<b>Field of study</b>	Light Engineering
<b>Study area</b>	Technology Sciences
<b>Qualification awarded</b>	Bachelor in Materials Technologies
<b>Length of programme</b>	3.5 years (7 semesters)
<b>Scope of programme (ECTS)</b>	210
<b>Language of instruction</b>	English/Lithuanian
<b>Location</b>	Vilnius, Lithuania
<b>Starting date</b>	1 <sup>st</sup> of September
<b>Tuition fee EU students</b>	2242 EUR/year
<b>Tuition fee Non-EU students</b>	3500 EUR/year

### PROGRAMME DESCRIPTION

- The objective* of *Light Engineering* studies is to achieve the fundamental knowledge of physics, chemistry, and mathematics, the applied understanding of material synthesis and characterization, operation principles of lasers, photovoltaic and light emitting devices, and, finally, to develop and train the practical technological and engineering skills needed for work in lasers, laser technology, modern lighting, photovoltaics, photonics and semiconductor industries enterprises.

The study program is designed for developing of skills to carry out standard laboratory procedures, to synthesize materials and to apply chemical knowledge for the processes to development, or to the deeper understanding of the principles of operation of modern lasers, laser beams and how to characterize and manipulate them. This will be achieved through training in the laboratory, practices in experiments based on group and individual work.

The studies include a balanced set of theoretical lectures, practical seminars and laboratory training, based on group and individual work.

- *Career opportunities*  
The graduates will acquire knowledge and competences allowing them to pursue a carrier in light technology industry in Lithuania or abroad.
- *Access to further studies*  
The graduates will be able to continue their studies at Masters and PhD levels. The nearest postgraduate directions - laser physics and optical technology, laser technology, material science and semiconductor physics, Optoelectronic Materials and Technologies.

## KEY LEARNING OUTCOMES

Having completed *Light Engineering* programme a graduate acquires professional competence to carry out complex work which requires the fundamental knowledge of physics, chemistry, and mathematics, as well as applied understanding of material synthesis and characterization, operation principles of lasers, photovoltaic and light emitting devices, and the practical skills of programming, general lighting design, and standard laboratory procedures. The graduates will gain the technological skills and engineering competences in the following fields of high-tech: understanding of optical systems operation, analysis and development; knowledge of semiconductor electronic and optoelectronic devices operating principles; material synthesis and knowledge of technological processes; understanding of the principles of operation of modern lasers; modern digital modelling techniques, the software for the process automation and control.

## COURSE INFORMATION

The programme has the following structure

Course Type	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester	3 <sup>rd</sup> Semester
<b>Compulsory Courses</b>	General Physics I (5 ECTS)	General Physics II (5 ECTS)	General Physics III (5 ECTS)
	Higher Mathematics I (5 ECTS)	Higher Mathematics II (10 ECTS)	Solid State Physics (10 ECTS)
	English for Specific Purposes (5 ECTS)		
	Study Skills and Computer Literacy for Physicists (5 ECTS)	Research and Innovation Management (5 ECTS)	Visual Programming (5 ECTS)
	Basic Concepts in Chemistry (5 ECTS)	Numerical Methods I (5 ECTS)	Applied Electronics I (5 ECTS)
	Technical Drawings (5 ECTS)	General Education Electives I (5 ECTS)	General Education Electives II (5 ECTS)

Course Type	4 <sup>th</sup> Semester	5 <sup>th</sup> Semester	6 <sup>th</sup> Semester	7 <sup>th</sup> Semester
<b>Compulsory Courses</b>	General Physics IV (5 ECTS)	Semiconductors Growth Technologies (5 ECTS)	Optoelectronic and Lasers Engineering (5 ECTS)	Practice (15 ECTS)
	Computerized Physical and Technological Measurements (5 ECTS)	Laser Technology (5 ECTS)	Metrology of Light Sources and Components (5 ECTS)	
	Lasers (5 ECTS)	Organic Optoelectronics (5 ECTS)	Optical System Design (5 ECTS)	Final Thesis (15 ECTS)
	Optoelectronics (5 ECTS)	Solar Energy and Photovoltaics (5 ECTS)	Materials Characterization Techniques (5 ECTS)	
	Numerical Methods II (5 ECTS)	General Education	Course Project (5 ECTS)	

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	ECTS)	Electives III (5 ECTS)		
Elective Courses	Functional and Smart Materials (5 ECTS)	Optical Spectroscopy (5 ECTS)	Fiber Technology (5 ECTS)	
	Applied Electronics II (5 ECTS)	Modern Illumination Technologies and Light Design (5 ECTS)	Nano- and Microstructure Technologies (5 ECTS)	

## GRADUATION REQUIREMENTS

The students are expected to have formed comprehensive both theoretical knowledge and practical skills in the fields of lasers, organic and inorganic semiconductor light emitters, intelligent lighting solutions, solar cells and other technologies dealing with visible, ultraviolet, and infrared light.

## ADMISSION REQUIREMENTS AND SELECTION CRITERIA

- Matura (high school leaving) certificate;
- The selection criteria are based on the weighted average of relevant grades in mathematics, physics, native language and English (foreign) language.

## EXAMINATION AND ASSESSMENT REGULATIONS

<http://www.vu.lt/en/studies/academic-information/credit-and-grading-system>

### Academic contact

Assoc. prof. dr. Renata Butkutė  
[renata.butkute@ftmc.lt](mailto:renata.butkute@ftmc.lt)

### Admission contact

Please apply for more information at Admission Office by e-mail [admissions@cr.vu.lt](mailto:admissions@cr.vu.lt)