

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Common		
Type and level of studies		Doctoral studies		
The name of the course		Optoelectronics		
Lecturer (for lectures)		Paunović V. Vesna		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Introduction to the light properties, light sources and detectors, and optoelectronic circuits and systems.		
Course outcomes		Expanded knowledge in the field of optics and radiation physics. Practical mastery of optoelectronic techniques and technologies of optoelectronic devices and systems. Detailed knowledge of laser devices and systems. Use of lasers and their control in various systems. Making projects.		
Course outline				
Theoretical teaching		Optoelectronics as experimental science, i.e. scientific cycle of theory and experiment, and its multidisciplinary in the viewpoint literature and internet technology, as the basis of study of light and matter. Optics, electrodynamics, electronics, quantum and statistical physics of radiation. Source of light and components of telecommunication devices and systems. Interaction of radiation and matter. Laser light sources. Semiconductor lasers. Some telecommunication laser systems. Information displays, cathode ray, LC, TFT and perspective of development of display technology. Discrete and integrated optoelectronic components and devices. Integrated and quantum optoelectronics. Optical, electro optical and quantum-electrodynamical effects in the optical circuits and devices. Propagation of electromagnetic waves in anisotropic crystals. Integrated optical systems for propagation, modulation, oscillation and switch of light in optical dielectric materials. Optoelectronic materials and technologies. Limits and perspective of development of optoelectronics.		
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	B. Naci, E. Ayse, Semiconductors for Optoelectronics : Basics and Applications, Springer International Publishing, 2019			
2	S.C.Gupta, Optoelectronic devices and systems , Prentice Hall of India Private, 2015			
3	Chartier, G.; Introduction to Optics, Springer, 2005.			
4	Anil K. Maini Lasers and Optoelectronics, John Wiley and Sons Ltd, 2013			
5	Wenping Hu, Organic Optoelectronics, Wiley-VCH , 2013			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
3	0	0	0	0
Teaching methods		Theoretical lectures, consultations, participation in realization of scientific-research projects, seminar papers and projects.		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	
Exercises			Oral exam	50
Colloquia				
Projects		50		