

E – Charakteristika studijního předmětu/Subject Specification					
Název studijního předmětu / Subject title	Photonics				
Typ předmětu / Subject type	Obligatory elective		dopor. ročník / semester/ recommended year / semester	1/2	
Rozsah studijního předmětu / Study load in hours and credits	2	hod. za týden / weekly load	2+2	Kreditů / Credits	5
Jiný způsob vyjádření rozsahu / Other expression of study load	14 weeks, each 2 hours of lectures and 2 hours of seminary				
Způsob zakončení / Assessment	Examination		Forma výuky / Form of teaching	Lecturers and labs	
Další požadavky na studenta / Other demands on students					
Vyučující / Lecturer	Václav Kopecký, Prof., M. Sc., Ph.D.				
Stručná anotace předmětu / Subject annotation					
The subject is an introduction into photonics. Students are taught selected topics in optics, quantum electronics and optoelectronics and also about basic applications of these branches of science.					
Basic subjects of lectures:					
<ul style="list-style-type: none">• interaction photons and atoms - spontaneous emission, absorption and stimulated emission• coherent optical amplifier• lasers, theory of laser oscillation and characteristics of laser radiation• photons in semiconductors - interaction photons, electrons and holes in semiconductor, generation, recombination and injection• light-emitting diodes, laser diodes, injection laser diodes• characteristics of semiconductor detectors - external and internal photoeffect, quantum efficiency, sensitivity, response time, gain• semiconductor photodetectors – photoconductors, photodiodes, avalanche photodiodes, photodetector noise					
Gained knowledge allows student’s orientation in this booming field. The focus is placed on applications using laser radiation, detectors of light in machinery that is using controlled stream of photons.					
Informace ke kombinované nebo distanční formě / Information for students in external form of study					
Rozsah konzultací (soustředění) / Consultations, study meetings	3		hodin za týden / hours per week		
Rozsah a obsahové zaměření individuálních prací studentů a způsob kontroly / Individual student work – type, load, content and way of checking					
Type: theoretical and experimental work in laboratory Content: computation exercises and laboratory experiments Load: approx. 10 hours Checking: Progress checking and completion checking at the end of course					
Studijní literatura a studijní pomůcky / Reading list and study utilities					
Bahaa, E., A., Saleh, Malvin, C., T.: Fundamentals of Photonics, John Wiley & Sons, Inc., (ISBN: 978-0-471-83965-1) New York 1991					