

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Optical Signal Processing		Code 1010832131010834042
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty Telecommunication Systems	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: - Project/seminars: 1		No. of credits 2
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Jan Lamperski email: jlamper@et.put.poznan.pl tel. +48 61 665 3809 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mathematics, EM field theory, optics, photonics and optotelekomunikacji.
2	Skills	Able to solve basic problems in the field of optoelectronics, electronics and telecommunications with the use of mathematical tools.
3	Social competencies	Understand the diversity of available technologies and their impact on the development of the ICT sector.
Assumptions and objectives of the course: Provide students with theoretical and practical knowledge of modern devices and subsystems for all optical signal processing.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. He has knowledge of the physical effects used for optical signal processing - [-K2_W08]		
2. Understand the operation and construction of selected optical signalprocessing devices - [-K2_W08]		
Skills:		
1. Can define requirements and select appropriate due to the specific use optical signal processing components - [-K2_U17, K2_U18]		
2. Can evaluate the OSP elements in terms of their advantages and limitations - [-K2_U17]		
Social competencies:		
1. Understands the importance of all optical technologies such as wavelength conversion, channel demultiplexing, data-format conversion, and optical regenerationof for telecom applications and impact on the development of ICT sector - [-K2_07]		
Assessment methods of study outcomes		
Oral presentation		
Course description		

Nonlinear effects in optical fibers (SPM, XPM, FWM, SGM, XGM) Nonlinear semiconductor amplifiers Nonlinear fiber-loop mirror Mach-Zehnder, Sagnac interferometer application for signal processing Ultra fast optical swiching Wavelength conversion All optical chanel multiplexing and demultiplexing (WDM, OTDM) All optical 2R, 3R regeneration DPSK signal regeneration SAW based signal processing Optical lens based Fourier transform Optical pattern recognition		
Basic bibliography: 1. G. P. Agraval, Nonlinear Fiber Optics, Academic Press, Londyn 2. E. Desurvire, Erbium Doped Fiber Amplifiers, John Wiley & Sons Ltd. 3. K. Gniadek, Optyczne przetwarzanie informacji, PWN, Warszawa, 1992		
Additional bibliography: 1. H. Stark, Applications of Optical Fourier Transforms, Academic Press		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	30	
2. Project	30	
3. Self or teamwork on project	8	
4. Prezenation	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	65	2
Contact hours	50	2
Practical activities	30	1