

WROCLAW UNIVERSITY OF TECHNOLOGY – PHD STUDIES

Faculty of Fundamental Problems of Technology, W11	
SUBJECT CARD	
Course name in Polish	Światłowody i ich zastosowania
Course name in English	Optical fibers and their applications
Course language	Polish
University-wide general course type: 1) basic course (mathematics, physics, chemistry, other) 2) humanity course 3) managerial skills 4) English language 5) other modern language	
Departmental course developing professional skills: 1) specialized course 2) interdisciplinary course X 3) seminar (interdisciplinary, specialized, departmental)	
Type of course (obligatory, optional)	
Educational effects according to ZW 26/2017: ZW 26/2017): ZW 26/2017): P8S_WG , P8U_W , P8S_UW , P8U_U, P8U_K	
Subject code: FZP9383	

*delete as applicable

	Lecture	Laboratory	Seminar
Number of hours of organized classes in University (ZZU)	30		
Number of hours of total student workload (CNPS)	90		
Form of crediting	Exam **	Exam / crediting with grade*	Oral presentation
Number of ECTS points	3		
including number of ECTS points for practical (P) classes			
including number of ECTS points for direct teacher-student contact (BK) classes	2		

*delete as applicable **In case of didactic courses also inspections and evaluation classes

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES	
1.	Knowledge on general physics

SUBJECT OBJECTIVES	
C1	Gaining knowledge on light propagation in planar and fiber waveguides of different types
C2	Gaining knowledge on applications of optical fibers in telecommunication and metrology

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SUBJECT EDUCATIONAL EFFECTS

Relating to knowledge:

PEK_W01: Knowledge on light propagation in optical waveguides of different types

PEK_W02: Knowledge on applications of optical fibers in telecommunications and metrology.

Relating to skills:

PEK_U01: Capability of planning own development and inspiring of others.

PEK_U02 : Capability of using knowledge for creative identification, formulation and solving complex problems.

Relating to social competences:

PEK_K01: Awareness of the role of collaboration, including international, in conducting research and analyzing obtained results.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours
Lec. 1	History of optical fibers	2
Lec. 2	Total internal reflection	2
Lec. 3	Planar waveguides	2
Lec. 4	Cylindrical waveguides	2
Lec. 5	Multimode waveguides	2
Lec. 6	Single mode waveguides	2
Lec. 7	Dispersion in optical fibers	2
Lec. 8	Specialty fibers	2
Lec. 9	Photonic crystal fibers	2
Lec. 10	Bragg gratings and long period gratings in optical fibers	2
Lec. 11	Fiber-optic couplers	2
Lec.12	Fiber-lasers and amplifiers	2
Lec. 13	Fiber-optic sensors	2
Lec. 14	Fiber-optic gyroscope	2
Lec. 15	Multiplexing of fiber-optic sensors, distributed sensing	2
	Total hours	30

TEACHING TOOLS USED

N1. Multimedia presentations
 N2. Providing lecture notes
 N3. Consultations

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

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Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
F1	PEK_W01 PEK_W02 PEK_U01 PEK_U02 PEK_K01	Written examination, 4-5 open questions
P=F1		
PRIMARY AND SECONDARY LITERATURE		
<u>PRIMARY LITERATURE:</u>		
<p>[1] [R. G. Elion and H. A. Elion , Marcel Dekker Fiber Optics in Communication Systems, Inc, NY and Basel</p> <p>[2] B. E. A. Saleh, M. C. Teich, Fundamentals of Photonics</p> <p>[3] E. Udd, Fiber Optic Sensors: An Introduction for Engineers and Scientists</p> <p>[4] F. T.S. Yu, S. Yin , P. B. Ruffin, Fiber Optic Sensors, Second Edition</p> <p>[5]</p>		
<u>SECONDARY LITERATURE:</u>		
<p>[1] M. Marciniak, <i>Łączność Światłowodowa</i></p> <p>[2] <i>Optical Fiber Sensor Technology</i>, Edited by K.T.V. Grattan and B.T. Meggitt, Chapman and Hall</p>		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
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