DOCTORAL SCHOOL OF WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

SUPERVISOR/TEAM/ DECLARING/CONDUCTING COURSE:
prof. dr hab. inż. Wacław Urbańczyk

DEPARTMENT **W11/K5** / STUDIUM

COURSE 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 science course (mathematics, physics, chemistry, computer science or other) : ……..
2) humanities course: …………………………………………………………………….
3) management course: …………………………………………………………………..
4) English language: ……………………………………………………………………
5) didactics of higher education course: …………………………………………………

Specialized courses for PhD students receiving education in discipline*: …………………………..………………………………….…………………
1) specialized course in discipline: ……………………………………………………..
2) interdisciplinary course in the field of several disciplines: **physical sciences, automation, electronics and electrical engineering, technical computer science and telecommunications, biomedical engineering, chemical sciences, chemical engineering ,**
3) seminar in discipline or interdisciplinary: ………………………………………….

Subject code: NFQ100126W

* delete as applicable

	Lecture	Foreign language course	Seminar	Mixed forms
Number of hours of organized classes in university (ZZU)	**30**			
Grading	**Exam**	Exam	Oral presentation	Exam, inspection, evaluation classes

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge and skills in general physics

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COURSE OBJECTIVES
C1 Gaining knowledge on light propagation in waveguides of different types.
C2. Gaining knowledge on applications of optical fibers in telecommunications and metrology

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PROGRAM CONTENTS

Form of classes – lecture (Lec)		Number of hours
Lec1	History of fiber optics	2
Lec2	Total internal reflection phenomenon	2
Lec3	Planar waveguide	2
Lec4	Cylindrical optical fiber	2
Lec5	Multimode optical fibers	2
Lec6	Single mode optical fibers	2
Lec7	Dispersion in optical fibers	2
Lec8	Specialty fibers	2
Lec9	Photonic optical fibers	2
Lec10	Fiber optic Bragg gratings, long period gratings	2
Lec11	Fiber optic couplers	2
Lec12	Fiber lasers and fiber amplifiers	2
Lec13	Fiber optic sensors	2
Lec14	Fiber optic gyroscope	2
Lec15	Multiplexing fiber optic sensors, measurements of distributed quantities	2
….	Total hours	30

TEACHING TOOLS USED

N1. Lecture with multimedia presentation
N2. Providing access to lecture materials
N3. Consultations

ACHIEVED SUBJECT LEARNING OUTCOMES

Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge	**P8S_WG**	-student has a sound knowledge of basic subjects such as mathematics, physics, chemistry or others - has an advanced knowledge fundamental to a field relevant to his/her research, including the most advanced methods of research and verification of results achieved - has advanced knowledge of directional subjects in a given discipline or in interdisciplinary subjects - has knowledge at an advanced level of discipline and subject matter relevant to the field of research carried out, including the most recent research findings and scientific achievements
Knowledge	**P8S_UW**	- student has scientific and technological skills relevant to methods and methodology of conducting scientific research and critical evaluation of the results obtained - is able to create and conduct independent research, including outside the educational institution - is able to creatively interpret the results obtained and to

		search for their application - is prepared to intensify research with commercial potential

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] R. G. Elion and H. A. Elion , Marcel Dekker Fiber Optics in Communication Systems, Inc, NY and Basel

[2] B. E. A. Saleh, M. C. Teich, Fundamentals of Photonics

[3] E. Udd, Fiber Optic Sensors: An Introduction for Engineers and Scientists

[4] F. T.S. Yu, S. Yin , P. B. Ruffin, Fiber Optic Sensors, Second Edition

SECONDARY LITERATURE:

[1] M. Marciniak, *Łączność Światłowodowa*

[2] *Optical Fiber Sensor Technology*, Edited by K.T.V. Grattan and B.T. Meggitt, Chapman and Hall

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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