

COURSE DESCRIPTION CARD

Course name	Fiber Optic Technology				
Course type	optional	Course code	SDPB0010	ECTS credits	2
Forms and number of hours	lecture: 20 h	Scientific discipline	automation, electronics and electrical engineering; biomedical engineering, mechanical engineering		
Course objectives	Teaching the analysis of electromagnetic wave propagation in a fiber optic. Acquainting with the methods of producing optical fibers. Acquainting with fiber optic telecommunications systems. Teaching the principles of operation of long-distance fiber optic links, medium-range fiber optic link, local fiber optic networks and explaining the principles of measuring their parameters. Getting to know WDM systems and optical amplifiers. Overview of the latest trends and application possibilities of fiber optic technology.				
Course content	1. Propagation of an electromagnetic wave in an optical fiber. 2. Methods of fabrication of the optical fibers. 3. Types of telecommunications networks. Optical links - power budget, dyspersion, transmission speed. 4. Types and applications of optical amplifiers. 5. Optical signal multiplexing. 6. Methods of measuring the parameters of optical fiber networks. 7. Prospects for the development of optical fiber technology.				
Teaching methods	Lecture with discussion with the students. Students' own studies based on the indicated literature sources, workshops in the laboratory				
Assessment method	Lecture: assessment				
Symbol of learning outcome	Learning outcomes		Reference to the learning outcomes for the field of study for the 8 th level of Polish Qualification Framework (PRK)	Methods of assessing the learning outcomes	
LO1	PhD student analyzes the propagation of an electromagnetic wave in an optical fiber		SD_W1	assessment	
LO2	PhD student lists and describes the principle of operation of optical fiber systems		SD_W1	assessment	
LO3	PhD student describes methods of diagnostics of fiber optic networks		SD_W1	assessment	
LO4	PhD student indicates development trends and application possibilities of fiber optic technology		SD_W2	assessment	

Student workload (in hours)	
Lecture	20
Consultations	1
The unassisted student work	10
Implementation of project tasks and preparation for and participation in exams/tests	5
Total	36
ECTS credits	2

Basic references	<ol style="list-style-type: none">1. Peng, Gang-Ding, <i>Handbook of Optical Fibers</i>, Springer 20192. Govind P. Agrawal, <i>Fiber-Optic Communication Systems</i>, Wiley, 20103. Valerii (Vartan) Ter-Mikirtychev, <i>Fundamentals of Fiber Lasers and Fiber Amplifiers</i>, Springer 2014
Supplementary references	<ol style="list-style-type: none">1. Didactic materials in the form of scientific articles provided by the teacher
Author of the programme	Marcin Kochanowicz, PhD, DSc, assoc. prof.
Date of issuing the programme	15.03.2021