

**COURSE DESCRIPTION CARD**

<b>Course name</b>	<b>Fiber lasers</b>				
<b>Course type</b>	<b>optional</b>	<b>Course code</b>	<b>SDPB0004</b>	<b>ECTS credits</b>	<b>2</b>
<b>Forms and number of hours</b>	<b>lecture: 20 h</b>	<b>Scientific discipline</b>	automation, electronics and electrical engineering; biomedical engineering, mechanical engineering		
<b>Course objectives</b>	Fiber lasers and broadband sources – presentation of the design and application requirements. Characteristics of modern manufacturing methods, used materials and construction of active optical fibers for fiber lasers. Teaching methods of analysis and measurement of emission parameters of continuous wave and pulsed lasers. Introduction to the applications of fiber lasers in metrology, material processing, biophotonics and military technology. Acquainting with development trends in the field of fiber lasers.				
<b>Course content</b>	<ol style="list-style-type: none"> <li>1. Fiber lasers - design and application requirements</li> <li>2. Manufacturing methods and constructions of active optical fibers</li> <li>3. Optical parameters of fiber lasers and methods of their analysis</li> <li>4. Applications of fiber lasers in metrology, material processing, biophotonics and military technology.</li> <li>5. Trends in the development of fiber lasers</li> </ol>				
<b>Teaching methods</b>	Lecture with discussion with the students. Students' own studies based on the indicated literature sources, workshops in the laboratory				
<b>Assessment method</b>	Lecture: assessment				
<b>Symbol of learning outcome</b>	<b>Learning outcomes</b>		<b>Reference to the learning outcomes for the field of study for the 8<sup>th</sup> level of Polish Qualification Framework (PRK)</b>	<b>Methods of assessing the learning outcomes</b>	
<b>LO1</b>	Describes the design and application requirements of fiber lasers		SD_W1	assessment	
<b>LO2</b>	Describes the fabrication methods and constructions of active optical fibers		SD_W1, SD_U2	assessment	
<b>LO3</b>	Lists the parameters of fiber lasers and describes the methods of their analysis		SD_W1, SD_U2	assessment	
<b>LO4</b>	Indicates the development trends and application possibilities of fiber lasers		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"><li>1. L. Dong, B. Samson, <i>Fiber Lasers Basics, Technology, and Applications</i>, CRC Press 2016.</li><li>2. Valerii (Vartan) Ter-Mikirtychev, <i>Fundamentals of Fiber Lasers and Fiber Amplifiers</i>, Springer 2014</li></ol>
Supplementary references	<ol style="list-style-type: none"><li>1. Didactic materials in the form of scientific articles provided by the teacher</li></ol>
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Date of issuing the programme	15.03.2021