

Study program	Level of studies		Third cycle	
	Title of the study program		Doctoral studies in physics	
Course title	OPTICAL FIBER SENSORS			
Course ID	Semester	Course status	ECTS credits	Teaching hours
PAP7031	I/II	Elective	10	30
Course aims and expected learning outcomes	<p>To prepare candidates to use optical fibers to measure a wide range of physical phenomena.</p> <p>Learning outcomes include:</p> <ul style="list-style-type: none"> <li>• learning the basic theories of light traveling through fibers;</li> <li>• training the candidate to select an appropriate optical fiber for a suitable physics experiment; and</li> <li>• training the candidate to realize a wide range of light fiber-based experiments.</li> </ul>			
COURSE CONTENT				
<p><b>Basics of optical fiber technology; Brillouin, Rayleigh and Raman scattering; Single-mode and multimode operation; Multicore fiber; Photonic fibers; Fiber with polarization maintenance; Modulation techniques; Interferometers based on optical fibers; Gyroscope; Light transmitter; Light signal detectors at different wavelengths; Fibers with a Bragg grating - FBG; Light collimators; Spatially distributed sensors; Remote sensors; Optical fibers in medicine;</b></p>				
LITERATURE			ASSESSMENT OF LEARNING	
<ul style="list-style-type: none"> <li>• Yin, Shizhuo, Paul B. Ruffin, and T. S. Francis, eds. <i>Fiber optic sensors</i>. CRC press, 2017.</li> <li>• Fang, Zujie, et al. <i>Fundamentals of optical fiber sensors</i>. Vol. 226. John Wiley &amp; Sons, 2012.</li> <li>• Maria de Fátima, F. Domingues, and Ayman Radwan. <i>Optical Fiber Sensors for LoT and Smart Devices</i>. Springer, 2017.</li> <li>• Milatović, Dragoljub, and Vasvija Ajdinović. <i>Optoelektronika</i>. Svjetlost, 1987.</li> </ul>			Assessment Method	Points
			Tests/Partial exams	20
			Seminar paper/project	20
			Practical work	20
			Final exam	30
			Homeworks	10
			Total	100
Remarks				