

<b>Course code</b>																																	
<b>Type and description</b>	PD – elective course from a different discipline																																
<b>ECTS credit</b>	1																																
<b>Course name</b>	Signals and Systems																																
<b>Course name in Polish</b>	Sygnaly i systemy																																
<b>Language of instruction</b>	English																																
<b>Course level</b>	8 PRK																																
<b>Course coordinator</b>	prof. dr hab. inż. Sławomir Hausman																																
<b>Course instructors</b>	prof. dr hab. inż. Sławomir Hausman																																
<b>Delivery methods and course duration</b>	<table border="1"> <thead> <tr> <th></th> <th>Lecture</th> <th>Tutorials</th> <th>Laboratory</th> <th>Project</th> <th>Seminar</th> <th>Activity</th> <th>Total of teaching hours during semester</th> </tr> </thead> <tbody> <tr> <td>Contact hours</td> <td>15</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td>0</td> <td>15</td> </tr> <tr> <td>E-learning</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> <td></td> </tr> <tr> <td>Assessment criteria (weightage)</td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table>		Lecture	Tutorials	Laboratory	Project	Seminar	Activity	Total of teaching hours during semester	Contact hours	15	0	0	0		0	15	E-learning	No	No	No	No	No	No		Assessment criteria (weightage)					0	0	
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<b>Course objective</b>	<ol style="list-style-type: none"> <li>1. To acquire knowledge on methods of mathematical modelling of physical systems as abstract entities which process and generate signals carrying information.</li> <li>2. To apply the acquired knowledge to planning a research project whose goal is to solve, in an original way, a non-trivial scientific problem defined by the student.</li> <li>3. To prepare, deliver and discuss a presentation on the proposed problem solution in terms of the involved signals and systems analysis methodology.</li> </ol>																																
<b>Learning outcomes</b>	<p>On completing the course, PhD student will be able to:</p> <ol style="list-style-type: none"> <li>1. characterize main kinds of mathematical models of physical systems, as well as signals which are generated and/or processed in them – W1, W3, U3;</li> <li>2. describe theoretical basis of system and signal model selection for representation of a device/measurement setup relevant to student' field of study – U3, K2</li> </ol>																																
<b>Assessment methods</b>	<p>Methods of study effects verification</p> <p>Effects W1, W3, U3 ,K2: teacher assessment of student' presentation and activity in the class (attendance, discussion).</p> <p>The final mark comprises of evaluation of</p> <p>Multimedia presentation – 80%</p> <p>Activity – 20%</p>																																
<b>Prerequisites</b>																																	
<b>Course content with delivery methods</b>	<p>LECTURE</p> <ol style="list-style-type: none"> <li>1. Signals, their sources and properties. Signal spectrum. Need for signal processing. Classes of signals (analogue, discrete, digital, deterministic, periodic and aperiodic, random, stationary and non-stationary, noise).</li> <li>2. Systems classification (static, dynamic, causal, non-causal, linear, nonlinear, time-invariant, time-varying, stable, unstable). Convolution. Impulse response and frequency response. Positive and negative feedback.</li> </ol>																																

	<p>3. Measuring signal and system properties (checking linearity, analogue to digital converter, aliasing, spectrum analyser, filters).</p> <p>4. Numerical methods for signal analysis and system simulation.</p>
<b>Basic reference materials</b>	<p>1. Tadeusiewicz M.: Signals and Systems, Technical University of Łódź Press, Łódź, 2004</p> <p>2. Oppenheim A., Wilsky A., Nawab S., Signals and Systems, Pearson New International Edition, Harlow UK, 2014.</p>
<b>Other reference materials</b>	
<b>Average student workload outside classroom</b>	35 h
<b>Comments</b>	
<b>Last update</b>	Brak informacji