COURSE DESCRIPTION CARD – SPECIMEN

<table>
<tr><td colspan="10">Faculty of Mechanical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="5">Mechatronics</td><td colspan="2">Degree level and programme type</td><td>Bachelor's degree</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="5"></td><td colspan="2">Study profile</td><td></td></tr>
<tr><td rowspan="2">Course name</td><td colspan="5" rowspan="2">Physics</td><td colspan="2">Course code</td><td>IS-FME-00181W</td></tr>
<tr><td colspan="2">Course type</td><td></td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>winter</td></tr>
<tr><td>30</td><td>15</td><td>15</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>5</td></tr>
<tr><td>Entry requirements</td><td colspan="9">-</td></tr>
<tr><td>Course objectives</td><td colspan="9">Acquiring the ability to identify basic physical quantities; understanding of physical phenomena and processes in nature; application of laws of nature in technology and everyday life.</td></tr>
<tr><td>Course content</td><td colspan="9">Vibrational motion. Examples of harmonics: mathematical pendulum, physical pendulum. Suppressed vibrations. Forced oscillations. Resonance. Mechanical waves. Wave equation. Sound waves. Standing wave. Huygens principle. Interference of waves. Doppler effect. Electric charge. Coulomb's law. Electric current. Electric field. Magnetic field. Faraday's law of induction. Electromagnetic waves. Geometrical and wave optics. Laws of reflection and refraction. Polarization of light. Optical instruments. Photoelectric effect.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Classical lecture</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture –two written tests; classes – written test; laboratory classes – evaluation of reports, verification of preparation for classes</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">a student has a basic knowledge of laws and principles of physics</td><td colspan="2">MK1_W01</td></tr>
<tr><td>LO2</td><td colspan="7">a student is able to use known methods and mathematical models to solve problems in physics</td><td colspan="2">MK1_W01
MK1_W04</td></tr>
<tr><td>LO3</td><td colspan="7">a student is able to work both individually and in a team</td><td colspan="2">MK1_U02
MK1_K03</td></tr>
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LO4	a student is able to carry out measurements	MK1_W01 MK1_W04 MK1_U02 MK1_U03
LO5		
LO6		
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	written test	L,C,LC
LO2	written test	L,C,LC
LO3	observation of the student's work in the classroom	LC
LO4	observation of the student's work in the classroom	LC
LO5		
LO6		

Student workload (in hours)		**No. of hours**
Calculation	lecture attendance	30
	participation in classes, laboratory classes	30
	preparation for classes, laboratory classes, projects, seminars, etc.	15
	working on projects, reports, etc.	12
	participation in student-teacher sessions related to the classes/seminar/project	5
	preparation for and participation in exams/tests	40
	TOTAL:	132

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	65	2,5
Student workload – practical activities	90	3,5

Basic references	1. Cummings K., Understanding physics, Wiley, New York, 2004 2. University Physics, Openstax, 2016
Supplementary references	1. Halliday D., Principles of Physics, Wiley, New York, 2011
Organisational unit conducting the course	Department of Mechanics and Applied Computer Science
Date of issuing the programme	2021
Author of the programme	Ewa Mrozek, Ph.D., Eng

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar