COURSE DESCRIPTION CARD – SPECIMEN

<table>
<tr><td colspan="10">Faculty of Mechanical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="6">Mechanical Engineering</td><td>Degree level and programme type</td><td>Bachelor's degree</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td>Study profile</td><td></td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Composite mechanics</td><td>Course code</td><td>IS-FME-00173S
IS-FME-00173W</td></tr>
<tr><td>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+summer</td></tr>
<tr><td>30</td><td>30</td><td></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">To provide the students with knowledge of theoretical and numerical methods of simulation of composite mechanics.</td></tr>
<tr><td>Course content</td><td colspan="9">LECTURE
1. Basic information about composite materials. 2. Stress and strain measurements.
3. Constitutive equations for anisotropic materials, engineering material constants. 4. Transformation of constitutive equations to any reference system.
5. Composite micromechanics. 6. Layer composites, classical lamination theory. 7. Strength of layered composites. 8. Homogenization methods used for microperiodic composites.
PROJECT: Introduction to computer methods in composite design:
- computer aided in modelling of mechanical and thermal properties
- computer-aided analysis and optimization stage for elements made of composite materials.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">lecture – written exam; project classes – evaluation of reports of homowork and project, verification of preparation for classes, written exam</td></tr>
<tr><td>Assessment method</td><td colspan="9">Regular lectures: blackboard lectures with presentations and worked examples, discussions Regular classes: blackboard classes, work in groups, discussion, homework assignments Project: tutorial sessions with worked examples, discussion, problem solving, homework assignments.</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">knows and understands the basics of the theory of composite mechanics</td><td colspan="2">M2_W01,
M2_U04,</td></tr>
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		M2_U10,
LO2	can formulate and solve basic problems of mechanics of composite materials	M2_U04,
LO3	can describe the properties of isotropic, anisotropic materials	M2_U10,"
LO4	knows the physical interpretation of constitutive relationships, yeild criteria for composite mechanics	M2_U10
LO5		
LO6		
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	written exam, preparing the project	L, C, P
LO2	written exam, preparing the project	L, C, P
LO3	written exam, preparing the project	L, C, P
LO4	written exam, preparing the project	L, C, P
LO5		
LO6		

Student workload (in hours)		**No. of hours**
Calculation	lecture attendance	**30**
	participation in exercises classes	**15**
	participation in project classes	**15**
	preparation for exercises classes and report of project	**30**
	participation in student-teacher sessions related to the classes	**5**
	preparation for and participation in exams	**20**
	TOTAL:	**115**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	**62**	**2.5**
Student workload – practical activities	**53**	**2**

Basic references	1. R.M. Jones, Mechanics of Composite Materials, Taylor and Francis, 1975. 2. A K. Kaw, Mechanics of Composite Materials, Taylor and Francis, 2006. 3. Christensen R. M., 1980, Mechanics of composite materials, Wiley, New York.	
Supplementary references		
Organisational unit conducting the course	**Department of Mechanics and Applied Computer Science**	**Date of issuing the programme**
Author of the programme	**Dariusz Perkowski**	

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

S – seminar