COURSE DESCRIPTION CARD – SPECIMEN

<table>
<tr><td colspan="10">Faculty of Mechanical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="6">Mechanics and Construction of Machinery</td><td colspan="2">Degree level and programme type</td><td>Bachelor's degree</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6">Machines technology</td><td colspan="2">Study profile</td><td>Stationary</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Technologies of Chipless Forming</td><td colspan="2">Course code</td><td>FME-00172S</td></tr>
<tr><td colspan="2">Course type</td><td>Obligatory</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>summer</td></tr>
<tr><td>30</td><td></td><td>15</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>3</td></tr>
<tr><td>Entry requirements</td><td colspan="9">Materials science, Strength of materials</td></tr>
<tr><td>Course objectives</td><td colspan="9">To familiarize students with the basic technologies of plastic processing of metals and operation of machines implementing these processes.</td></tr>
<tr><td>Course content</td><td colspan="9">Factors affecting the plastic deformation process, influence of technological process on the properties of the product, plastic processing in elevated temperatures, sheet metal forming processes, cutting, bending, rolling processes, forging, extrusion processes, metallurgy of powders, casting, technological machinery.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Multimedia presentation, discussion, laboratory tasks</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture – written exam, oral exam; laboratory classes – evaluation of reports, verification of preparation for classes, tests;</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">Student defines and classifies the chipless forming methods;</td><td colspan="2">M1_W16, M1_W19</td></tr>
<tr><td>LO2</td><td colspan="7">Student defines and classifies the materials, machines and equipment for the chipless processing;</td><td colspan="2">M1_W11, M1_W16, M1_W17</td></tr>
<tr><td>LO3</td><td colspan="7">Student develops technological documentation, selects technology to specific engineering tasks;</td><td colspan="2">M1_U09, M1_U13, M1_U23, M1_U24</td></tr>
<tr><td>LO4</td><td colspan="7">Student designs equipment for the chipless treatments.</td><td colspan="2">M1_W07, M1_W09, M1_U13, M1_U14, M1_U15, M1_U17</td></tr>
<tr><td>LO5</td><td colspan="7"></td><td colspan="2"></td></tr>
</table>

LO6		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	written exam, oral exam	L
LO2	verification of preparation for laboratory classes report, written exam, oral exam	LC
LO3	laboratory classes report	LC
LO4	written exam, oral exam	L
LO5		
LO6		

Student workload (in hours)		No. of hours	
Calculation	lecture attendance	30	
	participation in classes, laboratory classes, etc.	15	
	preparation for classes, laboratoratory classes, projects, seminars, etc.	15	
	working on projects, reports, etc.	15	
	participation in student-teacher sessions related to the classes/seminar/project	5	
	implementation of project tasks	5	
	preparation for and participation in exams/tests	12	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		45	
Student workload – practical activities		15	

Basic references	Hosford, W. F., & Caddell, R. M. (2011). Metal forming: mechanics and metallurgy. Cambridge University Press. Wagoner, R. H., & Chenot, J. L. (2001). Metal forming analysis. Cambridge University Press. Tschaetsch, H. (2007). Metal forming practise: Processes-machines-tools. Springer Science & Business Media.
Supplementary references	J. Piwnik. The mechanics of plastic flow in the metal extrusion problems. Wydawnictwa WSE, Białystok, 2010. Kobayashi, S., Kobayashi, S., Oh, S. I., & Altan, T. (1989). Metal forming and the finite-element method (Vol. 4). Oxford University Press on Demand.

Organisational unit conducting the course	Department of Machine and Materials Technology	Date of issuing the programme
Author of the programme	Christopher Mogielnicki	

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

Please notice!
Depending on number of students enrolled for the subject hours of tuition are as follows (for each 30 hours given in course description card):
1 – 2 students - 5 hours of tuition hours;
3 – 4 students - 8 hours of tuition;
5 – 6 students - 11 hours of tuition;
7 – 8 students - 15 hours of tuition;
9 and more students - hours of tuition given by a teacher as regular classes.