MODULE DESCRIPTION

Module code	full-time studies:	**Z-ZIP1-E-610b**
	part-time studies:	**Z-ZIPN1-E-610b**
Module name	**Fundamentals of Lean Manufactruring**	
Module name in Polish	**Podstawy Lean Manufactruring**	
Valid from academic year	**2023/2024**	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	**MANAGEMENT AND PRODUCTION ENGINEERING**
Level of education	**1st degree**
Studies profile	**General**
Form and method of conducting classes	**Full-time and Part-time**
Specialisation	**All**
Unit conducting the module	**Department of Production Engineering**
Module co-ordinator	**Aneta Masternak-Janus, Phd**
Approved by:	**Dariusz Bojczuk, PhD, DSc**

MODULE OVERVIEW

Type of subject / group of subjects	**Major**
Module status	**Non-compulsory**
Language of conducting classes	**English**
Module placement in the syllabus - semester	**Semester VI**
Initial requirements	**No requirements**
Examination (YES/NO)	**NO**
Number of ECTS credit points	**1**

Method of conducting classes		**Lecture**	**Classes**	**Laboratory**	**Project**	**Other**
Per semester	full-time studies:	**15**				
	part-time studies:	**9**				

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	The student has a basic knowledge of the principles of Lean Manufacturing.	ZIP1_W14 ZIP1_W18
	W02	The student knows the methods and tools of Lean Manufacturing used to make decisions and solve problems in the enterprise.	ZIP1_W14 ZIP1_W18
Skills	U01	The student demonstrates the ability to suggest appropriate targeted actions in the aspect of reducing waste in production processes	ZIP1_U01
Social competences	K01	The student understands the need for continuous replenishment of knowledge in the field of modern Lean Manufacturing methods and tools.	ZIP1_K01
	K02	The student is ready to think and act in a creative and entrepreneurial way in the approach to identifying and reducing waste in production processes.	ZIP1_K05

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	Introduction to Lean Manufacturing: genesis, essence, principles. Basic methods and tools in the field of quality management: TQM, Six Sigma, PDCA, Ishikawa diagram. Basic methods and tools in the field of process management: 5S, pull flow, production by takt time, Just in Time and kanban, Heijunka, Jidoka, SMED, TPM, Poka Yoke, Andon, VSM, visualization, standardization.

METODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes *(select X)*					
	Oral exam	Written exam	Test	Project	Statement	Other
W01			X			
W02			X			
U01			X			X
K01			X			X
K02			X			X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Obtaining at least 50% of the points in the colloquium in the form of a test on the content provided during the lectures.

STUDENT WORKLOAD

<table>
<tr><th colspan="13">Balance of ECTS points</th></tr>
<tr><td rowspan="3">No.</td><td rowspan="3">Type of student's activity</td><td colspan="10">Student's workload</td><td rowspan="3">Unit</td></tr>
<tr><td colspan="5">full-time</td><td colspan="5">part-time</td></tr>
<tr><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td></tr>
<tr><td>1.</td><td>Participation in the activities</td><td>15</td><td></td><td></td><td></td><td></td><td>9</td><td></td><td></td><td></td><td></td><td>h</td></tr>
<tr><td>2.</td><td>Other (consultation, exam)</td><td>2</td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td>h</td></tr>
<tr><td>3.</td><td>Number of hours of a student's assisted work</td><td colspan="5">17</td><td colspan="5">11</td><td>h</td></tr>
<tr><td>4.</td><td>Number of ECTS credit points which are allocated for assisted work</td><td colspan="5">0,7</td><td colspan="5">0,4</td><td>ECTS</td></tr>
<tr><td>5.</td><td>Number of hours of a student's unassisted work</td><td colspan="5">8</td><td colspan="5">14</td><td>h</td></tr>
<tr><td>6.</td><td>Number of ECTS credit points which a student receives for unassisted work</td><td colspan="5">0,3</td><td colspan="5">0,6</td><td>ECTS</td></tr>
<tr><td>7.</td><td>Work input connected with practical classes</td><td colspan="5">0</td><td colspan="5">0</td><td>h</td></tr>
<tr><td>8.</td><td>Number of ECTS credit points which a student receives for practical classes</td><td colspan="5">0,0</td><td colspan="5">0,0</td><td>ECTS</td></tr>
<tr><td>9.</td><td>Total number of hours of a student's work</td><td colspan="5">25</td><td colspan="5">25</td><td>h</td></tr>
<tr><td>10.</td><td>Punkty ECTS za moduł
1 ECTS=25 hours</td><td colspan="10">1</td><td>ECTS</td></tr>
</table>

LITERATURE

1. Masternak-Janus A., Moćko M. (2021), *Improvement of the production process of an air handling unit based on Value Stream Mapping*, [w:] Ulewicz R., Hadzima B. (red.), Quality Production Improvement, Walter de Gruyter (Sciendo), Warszawa, s. 96-103.
2. Pazek K. (ed.) (2021), *Lean Manufacturing,* IntechOpen, London (https://www.intechopen.com/books/10548).
3. Vinodh S., (2022), *Lean Manufacturing. Fundamentals, Tools, Approaches, and Industry 4.0 Integration*, Taylor & Francis Ltd.