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| <b>Syllabus</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Course code                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Course name                                              | Lean Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Course version                                           | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>A. The location of the course in the study system</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Level of education                                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Degree level                                             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| A form of study                                          | Erasmus Exchange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Field of study                                           | Management Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Profile of study                                         | general academic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Specialization                                           | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Unit administrating course                               | Faculty of Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Unit implementing course                                 | Faculty of Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Course coordinator                                       | Sobolewska Olga, PhD Eng.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>B. General characteristics of the course</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Block                                                    | General                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Group of courses                                         | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Level of the course                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Course status                                            | Elective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Course language                                          | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Semester                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Academic year                                            | 2020/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Prerequisites                                            | Knowledge of the basics of management is required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| The minimum number of students                           | from 25 students, up to the limit of seats in the room (exercise)<br>no limits for students (lecture)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>C. Learning outcomes and teaching methods</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Aim of the course                                        | <p>After the course completion student:</p> <ul style="list-style-type: none"> <li>- have a knowledge of management principles and lean management;</li> <li>- have a knowledge and will be able to situate philosophy of lean management and manufacturing within management structure of the company;</li> <li>- will be able to implement the concepts of lean management in company's activity;</li> <li>- will be able to design value stream map and suggest improvements;</li> <li>- has a teamwork skills</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
| Assessment methods                                       | <p><b>A. Lecture</b></p> <p>1. <i>Formative assessment</i>: assessment of students' work during the lecture, partially interactive form of lecture</p> <p>2. <i>Summative assessment</i>: test with theoretical knowledge containing problem questions, possible grade 2-5, the credit assessment is required <math>\geq 3</math>.</p> <p><b>B. Exercise:</b></p> <p>1. <i>Formative assessment</i>: assessment of the correctness of the exercises carried out during the activities in the form of a team case study presentation, student's activity during course</p> <p>2. <i>Summative assessment</i>: project's evaluation of 2-5 and case study presentation, the credit assessment is required <math>\geq 3</math>.</p> <p><b>E. Final grade:</b></p> <p>Final grade will be calculated according to the formula: 30% (test) + 30% (case study) + 40% (project)</p> |

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| Learning outcomes                                                                        | See Table 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Form of classes and weekly dimension (number of hours per semester)                      | Lecture 8<br>Exercise 12<br>Laboratories 0<br>Projects 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| The course content                                                                       | <b>A.Lecture:</b><br>1. Introduction to Lean Management & Manufacturing<br>2. Process improvement and Lean Tools<br>3. Value stream mapping<br>4. Business Models for Lean Manufacturing, the Lean Culture<br><b>B. Exercise:</b><br>1. Case study analysis and discussion<br>2. Lean Tools<br>3. Visual stream mapping & future state map                                                                                                                                                                                                                                                                                                                    |
| Learning outcomes                                                                        | See Table 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Exam                                                                                     | N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Literature                                                                               | <b>Obligatory:</b><br>1. Womack, J.P. & Jones, D.T.(2003). <i>Lean Thinking: Banish Waste and Create Wealth in Your Corporation</i> , NY: Free Press.<br>2. Liker, J. (2004). <i>The Toyota Way</i> , NY: McGraw-Hill.<br><b>Supplementary:</b><br>1. Basu, R. (2009). <i>Implementing Six Sigma and Lean : a practical guide to tools and techniques</i> , Amsterdam: Elsevier/Butterworth-Heinemann.<br>2. Liker, J.K. (2004). <i>The Toyota Way. 4 Management Principles from the World's Greatest Manufacturer</i> , NY: Mc-Graw Hill.<br>3. Rich, N. (2006). <i>Lean evolution : lessons from the workplace</i> , Cambridge: Cambridge University Press. |
| Course website                                                                           | <a href="http://www.olaf.wz.pw.edu.pl">www.olaf.wz.pw.edu.pl</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>D. The student workload</b>                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of ECTS credits                                                                   | 2 ECTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Total hours of student work related to the learning outcomes achievement (description):  | 2 ECTS:<br>8h lecture +12h exercise + 3h literature study + 5h case study + 2h Value Stream Map + 3h consultations + 2h self-study + 5h project preparation = 40h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| The number of ECTS credits for courses that require the direct participation of teachers | 1,15 ECTS:<br>8h lecture +12 h exercise + 3h consultations = 23h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| The number of ECTS credits that the student obtains during the practical classes         | 1,6 ECTS:<br>12h exercise + 3h literature study + 5h case study + 2h Value Stream Map + 3h consultations + 2h self-study + 5h project preparation = 32h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>E. Additional Information</b>                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Remarks                                                                                  | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Date of last update                                                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Table 1

| General academic profile                 |                                                                                                                                                                                                                                                 |                                                    |                                                    |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| Subject effects                          |                                                                                                                                                                                                                                                 | Reference to the 2nd degree of PRK characteristics | Reference to the 1st degree of PRK characteristics |
| Knowledge – student knows                |                                                                                                                                                                                                                                                 |                                                    |                                                    |
| Effect:                                  | Absolwent zna i rozumie w pogłębionym stopniu teorie naukowe właściwe dla finansów oraz kierunki ich rozwoju, a także zaawansowaną metodologię badań ze szczególnym uwzględnieniem pozyskiwania funduszy i planowania finansowego przedsięwzięć | I.P7S_WG.o                                         | P7U_W                                              |
| Effect code:                             | I2_W01                                                                                                                                                                                                                                          |                                                    |                                                    |
| Verification:                            | Ocena pracy studenta w trakcie zajęć ćwiczeniowych, ocena projektu zaliczeniowego                                                                                                                                                               |                                                    |                                                    |
| Effect:                                  | główne trendy rozwojowe w zakresie inżynierii produkcji                                                                                                                                                                                         | II.S.P7S_WG.2.o<br>I.P7S_WG.o                      | P7U_W                                              |
| Effect code:                             | I2_W08                                                                                                                                                                                                                                          |                                                    |                                                    |
| Verification:                            | Ocena pracy studenta w trakcie zajęć ćwiczeniowych, ocena projektu zaliczeniowego                                                                                                                                                               |                                                    |                                                    |
| Abilities – student can                  |                                                                                                                                                                                                                                                 |                                                    |                                                    |
| Effect:                                  | Absolwent potrafi identyfikować, interpretować i wyjaśniać złożone zjawiska i procesy społeczne oraz relacje między nimi z wykorzystaniem wiedzy z zakresu inżynierii produkcji                                                                 | I.P7S_UW.o                                         | P7U_U                                              |
| Effect code:                             | I2_U02                                                                                                                                                                                                                                          |                                                    |                                                    |
| Verification:                            | Ocena studium przypadku i projektu zaliczeniowego                                                                                                                                                                                               |                                                    |                                                    |
| Effect:                                  | Absolwent potrafi przy identyfikacji i formułowaniu specyfikacji zadań oraz ich rozwiązywaniu: dobierać i wykorzystywać właściwe metody i narzędzia wspomagające oraz dokonywać oceny opłacalności ekonomicznej wdrożenia tych rozwiązań        | I.P7S_UW.o<br>III.P7S_UW.o                         | P7U_U                                              |
| Effect code:                             | I2_U16                                                                                                                                                                                                                                          |                                                    |                                                    |
| Verification:                            | Ocena studium przypadku i projektu zaliczeniowego                                                                                                                                                                                               |                                                    |                                                    |
| Social Competence – student is ready for |                                                                                                                                                                                                                                                 |                                                    |                                                    |
| Effect:                                  | Absolwent jest gotów do uznawania znaczenia wiedzy w rozwiązywaniu problemów poznawczych i praktycznych oraz konieczności samokształcenia się przez całe życie                                                                                  | I.P7S_KK                                           | P7U_K                                              |
| Effect code:                             | I2_K02                                                                                                                                                                                                                                          |                                                    |                                                    |
| Verification:                            | Ocena pracy studenta w trakcie zajęć ćwiczeniowych                                                                                                                                                                                              |                                                    |                                                    |
| Effect:                                  |                                                                                                                                                                                                                                                 |                                                    |                                                    |
| Effect code:                             |                                                                                                                                                                                                                                                 |                                                    |                                                    |
| Verification:                            |                                                                                                                                                                                                                                                 |                                                    |                                                    |