Course code	
Type and description	EC
ECTS credit	1
Course name	Design and Optimization of Experiment
Course name in Polish	Planowanie i optymalizacja eksperymentu
Language of instruction	English
Course level	8 PRK
Course coordinator	Dr inż. Katarzyna Dems-Rudnicka
Course instructors	Dr inż. Katarzyna Dems-Rudnicka
Delivery methods and course duration	

	Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester
Contact hours				15		0	15
E-learning	No	No	No	No	No	No	
Assessment criteria (weightage)				1,00		0,00	

Course objective	The aim of the course is to provide knowledge and skills in the use of basic experimental plans and optimization of experience.
Learning outcomes	After completing the course the PhD student is able to: 1. Plan the experiment with Factorial Designs and Fractional Factorial Designs – outcomes W4 2. Use Central Composition Designs – outcomes U4 3. Use the Response Surface Method and Taguchi method – outcomes U4 4. Plan the experiment with Simplex Designs – W4 5. Use specialized computer software to support planning and optimization of experience - outcomes K1 6. Explain the concepts and statistical procedures used in the analysis of the problems – outcomes W4, K1
Assessment methods	Learning outcome 1-6: assessment of the correctness and quality of the solution of the project task and the project report Learning outcome 5-6: additionally, presentation and discussion The final grade consists of: Realization of project task using the known methods - 60% written report (paper or electronic) - 20% solution presentation and discussion - 20%
Prerequisites	Knowledge of descriptive and mathematical statistics lectured at first and second degree studies
Course content with delivery methods	Practical application of specialized software (R program) for the preparation of Factorial Designs, Fractional Factorial Designs and Central Composition Designs; use of specialized functions of the R program for the Response Surface Method and Taguchi methods and Simplex Designs; experiment optimization supported by R program tools.
Basic reference materials	1. Montgomery D.C. Design and Analysis of Experiment, John Wiley & Sons, Inc., 2013 2. Mańczak K. Technika planowania eksperymentu, WNT, Warszawa, 1976 3. Biecek P. Przewodnik po pakiecie R, Oficyna Wydawnicza GiS, Wrocław, 2017 4. Materials prepared by the course instructor
Other reference materials	1. Korzyński M. Metodyka eksperymentu, WNT, Warszawa 2013 2. Paradis E. R for Beginners, https://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf
Average student workload outside classroom	20 h
Comments	The course is carried out in a computer laboratory
Last update	21.04.2023