WSB University						
Field of study: Production Management and Engineering						
Course: Industry 4.0 and smart factory						
Educational profile: practical						
Education level: first-cycle studies						
Number of hours per semester	1		2		3		4
	I	II	III	IV	V	VI	VII
Full-time studies (L/C/lab/pr/e)*						14	
Part-time studies (L/C/lab/pr/e)*						12	
LECTURER							
FORM	classes						
COURSE OBJECTIVES	Familiarizing students with technologies and assumptions of Industry 4.0. Familiarizing students with the methodology of implementing robotization / automation and the assessment of the viability of the processes from the economic point of view.						

Field-related learning outcome	Reference to PQF	Description of learning outcomes	Method of verification of learning outcomes
		Knowledge **The student**	
ZIP_W06	P6U_WG	Has the advanced knowledge of the principles of conducting a technological audit and evaluating the existing production solutions; the student recognises the development potential and assesses its economic viability and impact on employment, way of working and employee competences.	Assessment of the end-of-semester assignment
ZIP_W07	P6U_WG		
		Skills **The student**	
ZIP_U08	P6U_UW, Eng.	The student is able to analyze the existing production systems in terms of technology and economy. He can present substantive reasons and calculations justifying the implementation (or the lack of viability of the implementation) of technologies that fit in with the idea of Industry 4.0.	Assessment of the end-of-semester assignment
		Social competences **The student**	
ZIP_K01	P6U_KK	The student perceives the processes of automation and robotization, not only as an increase in the technological level, but as an improvement in production efficiency, predictive maintenance, the possibility	Assessment of the end-of-semester project, evaluation of the student`s participation in a discussion and active participation in class

		of collecting data and using the data in the planning and management of production processes.	

Student's own workload (1h teaching hour=45 minutes)**

Full-time	Part-time
participation in lectures =	participation in lectures =
participation in classes = 14	participation in classes = 12
preparation for classes = 14 analysing the literature on the subject	preparation for classes = 16 analysing the literature on the subject
preparation for lectures/tutorial =	preparation for lectures/tutorials =
preparation for an end-of-semester test/examination = 20	preparation for an end-of-semester test//examination = 20
the end-of-semester assignment preparation	the end-of-semester assignment preparation
project tasks =	project tasks =
e-learning =	e-learning =
credit/examination = 2	credit/examination = 2
other (specify the type) =	other (specify the type) =
Total:50	**Total:50**
ECTS points: 2	**ECTS points: 2**
Including practice 2	**Including practical classes: 2**

PREREQUISITES	Basic knowledge of production management, being acquainted with the main technological processes
COURSE CONTENT	Contact hours. Classes via the MS Teams platform. 1. Historical overview and the main assumptions of Industry 4.0 – smart factory. 2. Overview of technologies that fit in with the assumptions of Industry 4.0 - smart factory, IoT. 3. Presentation of a case study on the practical implementation of modernization of production automation. 4. Discussion of the methodology of activities in the implementation, evaluation of economic and social aspects. 5. How to audit the automation level – and assess the potential and possibilities of achieving the Industry 4.0 level..
COMPULSORY LITERATURE	Competitiveness and efficiency management through cognitive technologies in digital economy : the outline of the opportunities offered by cognitive technology and the environment Industry 4.0 in the enterprises of the power engineering subsector / Grzegorz Kinelski. - Toruń : Wydawnictwo Adam Marszałek, 2019. Organisational structure in the process of integration on the example of iron and steel industry enterprises in Poland : process digitisation in the industry 4.0. concept / Radosław Miśkiewicz. - Warsaw : Wydawnictwo Naukowe PWN, copyright © 2019.
OPTIONAL LITERATURE	Industry 4.0: Trends in Management of Intelligent Manufacturing Systems - Editors: **Knapcikova**, Lucia, **Balog**, Michal (Eds.) Robotics: Industry 4.0 Issues & New Intelligent Control Paradigms, Editors: **Kravets**, Alla G. (Ed.)
TEACHING METHODS	Contact hours: Mini lecture, presentation – follow-up comments, discussion, tasks done individually and in groups (individual work, group work)
TEACHING AIDS	Multimedia presentation, case study texts
PROJECT	Preparation of the concept and robotization plan for a given production process in accordance

(if implemented in the framework of the class module)	with the principles of Industry 4.0
FORM AND CONDITIONS OF ASSESSMENT	Evaluation of the written assignment, completing group tasks Written project assignment – a grade awarded for it.

* L-lecture, C- classes lab- laboratory, pr- project, e- e-learning