



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Resources of Industry 4.0

### Course

Field of study

Year/Semester

Engineering management

1/2

Area of study (specialization)

Profile of study

Enterprise resources and process management

general academic

Level of study

Course offered in

Second-cycle studies

polish/english

Form of study

Requirements

part-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

10

Tutorials

Projects/seminars

10

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab. inż. Joanna Kałkowska, prof. PP

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Faculty of Engineering Management

ul. Jacka Rychlewskiego 2, 60-965 Poznań

### Prerequisites

Student has knowledge of the foundations of management and information technologies carried out at first cycle of studies. In addition, he is able to integrate and use already acquired knowledge in practice and is ready to work within team structures.

### Course objective

The aim of the course is to interest students in the issues of industry 4.0 and to provide students with knowledge of the various conditions concerning adjusting enterprises to the requirements of industry 4.0 with the particular emphasis on the used resources.

### Course-related learning outcomes

Knowledge

1. Student has knowledge of legal norms, their sources, changes and ways of influencing organizations,



with particular emphasis on commercial law in relation to organizations adjusting to the requirements of industry 4.0

2. Student knows in depth methods and tools for modeling information and decision-making processes in organizations based on digital technologies
3. Student has expanded knowledge of the subject of contextual sciences in relation to management and ergological sciences as well as the economy based on intelligent digital technologies with particular emphasis on concepts and tools of industry 4.0
4. Student has knowledge of the connections occurring in network organizations (concerns, holdings, clusters, etc.) and has in-depth knowledge of organizational dependencies between organizational units of an enterprise in organizations based on digital technologies
5. The student has expanded knowledge of technical systems, facilities and devices, understands their role and importance in shaping economic organizations adjusting to the requirements of industry 4.0

#### Skills

1. Student has the ability to use the acquired knowledge in various areas and forms, extended by a critical analysis of the effectiveness and usefulness of applied knowledge in the process of adjusting the organization to the requirements of industry 4.0
2. The student has the ability to independently propose solutions in the field of adjusting enterprises to the requirements of industry 4.0
3. The student is able to properly analyze the causes and course of social processes and phenomena (cultural, political, legal, economic), formulate their own opinions on this topic and put simple research hypotheses and verify them in the context of the economy based on intelligent digital technologies
4. Student is able to make a critical analysis of existing technical solutions in a functioning business organization and propose the concept of adjusting the organization to the requirements of industry 4.0
5. Student is able to take responsibility for own work and jointly implemented tasks and manage team work in organizations based on digital technologies

#### Social competences

1. Student is aware of the interdisciplinary knowledge and skills needed to solve complex organization problems and the need to create interdisciplinary teams to adjust the organization to the requirements of industry 4.0
2. Student is able to see the cause-and-effect relationships in achieving the set goals and rank the importance of alternative or competitive solutions for the requirements of industry 4.0

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified by a test carried out after the last lecture. The test consists of 20 closed questions. Assessment threshold: 50% of the points (satisfactory).



Knowledge acquired under the project is verified on the basis of solving individual tasks covered by the curriculum. The student receives points for each task. Assessment threshold: 50% of the points (satisfactory).

### Programme content

Lecture: The essence of industry 4.0. Challenges and megatrends related to the fourth industrial revolution (advanced automation and robotization, intelligent technologies and materials, sharing economy). Key technologies of industry 4.0. Industry 4.0 pillars and their resources - technological resources (connectivity, automation, autonomization, intelligent product), organizational resources (cooperation, strategy, employees, leadership), process resources (standardization, integration with the environment, product life cycle integration, internal integration). Problems of adjusting enterprise resources to the requirements of industry 4.0.

Project: project of adjusting enterprise resources to the requirements of industry 4.0

### Teaching methods

Monographic lecture in the form of a multimedia presentation, with elements of a seminar lecture.

Project: solving project tasks based on the case study method

### Bibliography

Basic

1. Kozłowski K., Zygmuntowski J. (red.), FutureInsights: Technologie 4.0 a przemiany społeczno-gospodarcze, Oficyna Wydawnicza SGH, Warszawa 2017
2. Sobieraj J., Rewolucja przemysłowa 4.0, Instytut Technologii Eksploatacji- PIB w Radomiu, Radom 2018
3. Mazurek G., Transformacja cyfrowa biznesu – perspektywa marketingu”, PWN, Warszawa 2019

Additional

1. Schwab K., The Fourth Industrial Revolution, World Economic Forum, Geneva 2016

### Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for project, preparation for tests) <sup>1</sup>	55	2,0

<sup>1</sup> delete or add other activities as appropriate