



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Supportive Processes Management in Industry 4.0

### Course

Field of study

Engineering Management

Area of study (specialization)

The Enterprise Management of the Future

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

English

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

15

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

Ph.D. Eng., Edmund Pawłowski

Responsible for the course/lecturer:

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### Prerequisites

Enterprise management



## Course objective

Acquisition of knowledge and skills in designing industrial support processes 4.0

## Course-related learning outcomes

### Knowledge

The student characterizes the techniques for modeling support processes in Industry 4.0, including their unique features and requirements in the context of modern technologies [P7S\_WG\_04].

The student explains the impact of network structures, such as clusters and holding companies, on the efficiency and flexibility of support processes in an Industry 4.0 environment [P7S\_WG\_06].

The student understands the complexity of managing support processes in the context of the rapidly evolving Industry 4.0 environment and their role in overall enterprise performance [P7S\_WG\_08].

The student is able to identify the role of advanced technical devices and systems, including the Internet of Things, in modernizing and automating support processes [P7S\_WG\_10].

### Skills

The student applies theoretical knowledge to evaluate and improve support processes in an Industry 4.0 environment, using methods of critical analysis [P7S\_UW\_03].

The student independently develops innovative solutions to support process challenges, taking into account current technological and operational trends [P7S\_UW\_04].

The student conducts advanced analyses of support processes, formulating and verifying hypotheses for optimizing these processes [P7S\_UW\_07].

### Social competences

The student develops the ability to create and lead interdisciplinary teams to manage support processes, integrating diverse areas of knowledge and expertise [P7S\_KK\_01].

The student identifies and prioritizes key areas of support processes that require intervention and innovation, in the context of the strategic objectives of the enterprise [P7S\_KK\_02].

The student demonstrates skills in planning and managing complex support process projects, with particular emphasis on the application of new technologies and approaches in Industry 4.0 [P7S\_KO\_03].

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge of the lectures is verified during the written test. Written test in two versions: 1/ 5 open questions, 2/ 10 multiple-choice test questions. Maximum number of points = 100. Positive score from 65 points.

Knowledge from the exercises is verified by defending the project.



## Programme content

Industry 4.0 against the background of global industrial development. Organizational structure and business processes in the enterprise 4.0. Support processes in the enterprise 4.0. Cooperation and network connections in the scope of support processes. Logic of maintenance system development. Internet of things in maintenance processes

## Teaching methods

1. lecture: Monographic lecture, case studies
- 2 Exercises: multimedia presentation illustrated with examples given on the board and project execution

## Bibliography

### Basic

1. Hermann M., Pentek T., Otto B. Design Principles for Industrie 4.0 Scenarios: A Literature Review. Technische Universitat Dortmund; Working paper No: 1/2015
2. Kagermann et al. (2013) Kagermann, H., W. Wahlster and J. Helbig, eds., 2013: Recommendations, for implementing the strategic initiative Industrie 4.0: Final report of the Industrie 4.0 Working Group.
3. Pawłowski E. Adaptation of Polish Enterprises to Industry 4.0 Model / European Research Studies Journal - 2021, vol. 24, spec. iss. 5, s. 670-679
4. Pawłowski E. Development of Maintenance Systems in Polish Enterprises in the Context of Industry 4.0 W: Proceedings of the 36th International Business Information Management Association Conference (IBIMA), 4-5 November 2020, Granada, Spain. Sustainable Economic Development and Advancing Education Excellence in the era of Global Pandemic / red. Khalid S. Soliman: International Business Information Management Association, IBIMA, 2020 - s. 4889-4898
5. Pawłowski K., Pawłowski E. Modern Manufacturing Practices and Agile Enterprise. Anticipated Scope of Implementation and Empirical Results from Polish Enterprises / Krystian Pawłowski (WIZ), Edmund Pawłowski (WIZ) // Procedia Manufacturing - 2015, vol. 3, s. 464-471

### Additional

1. Sobieraj J.. Rewolucja przemysłowa 4.0. Wydawnictwi ITE, Radom, 2018
2. Schwab K. Czwarta rewolucja przemysłowa. Wydawnictwo Studio EMKA, 2018
3. Pawłowski E. , Wachowski M.. Wdrażanie systemu TPM w warunkach przedsiębiorstwa międzynarodowego . W: Zarządzanie we współczesnym przedsiębiorstwie : monografia / red. Stefan Trzcieleński: Wydawnictwo Politechniki Poznańskiej, 2006 - s. 31-46



### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	20	1,0

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