



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Traditional and modern manufacturing systems

### Course

Field of study

Logistics

Area of study (specialization)

Corporate Logistics

Level of study

Second-cycle studies

Form of study

part-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

16

Tutorials

Laboratory classes

Projects/seminars

16

Other (e.g. online)

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

Ph.D., Eng. Agnieszka Grzelczak

Responsible for the course/lecturer:

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Faculty of Engineering Management

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### Prerequisites

The student knows the basic concepts related to the design, implementation and operation of production systems in mechanical engineering industries. He should also be able to obtain information from specified sources and be willing to cooperate as part of a team.



## Course objective

Mastering the student's knowledge, skills and social competences related to the essence, scope of application and methods of designing and implementing modern production systems.

## Course-related learning outcomes

### Knowledge

knows the dependencies governing production systems and processes and their connections with logistics [P7S\_WG\_01]

knows issues related to production systems [P7S\_WG\_02]

knows detailed methods, tools and techniques in the area of modern production systems [P7S\_WK\_01]

knows extended concepts for traditional and modern production concepts [P7S\_WG\_05]

### Skills

is able to collect and present in an orderly manner information regarding modern production systems based on the literature and other sources [P7S\_UW\_01]

is able to communicate using appropriately selected means in a professional environment and in other environments regarding production topics [P7S\_UW\_02]

is able to assess the usefulness and possibility of using new achievements in the field of concepts regarding production systems [P7S\_UW\_06]

is able to formulate and solve tasks through interdisciplinary integration of knowledge from fields and disciplines used to design modern production systems [P7S\_UO\_01]

### Social competences

recognize causal relationships in achieving the set goals and grading the significance of alternative or competitive tasks [P7S\_KK\_01]

responsibility for own work and readiness to comply with the rules of working in a team and taking responsibility for the tasks carried out jointly [P7S\_KR\_01]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lectures is verified by the exam and by tests (quizzes) at individual classes (via the Moodle platform). Passing threshold: 50% of points.

The skills acquired during design classes are verified on the basis of the progress in the implementation of project tasks (implemented as a team) and the defense of the project. Passing threshold: 50% of points.

## Programme content



Lecture: Methods and techniques of designing production systems used in classical production systems - balance model and assembly line balancing model. Classification of classic production units according to the American-European model. Methods of designing production systems according to the JiT concept (0 inventories), lean production systems and agile production systems.

Project: Designing a production system according to classical and modern methods.

### Teaching methods

Lecture: informative (conventional) lecture - providing information in a structured way, supported by a multimedia presentation, illustrated with examples and tasks, and the case study method - analysis of specific illustrative (illustrative) or problematic (problem identification) cases.

Project: project method - individual or team implementation of a large, multi-stage cognitive or practical task, the effect of which is the creation of a work.

### Bibliography

#### Basic

Fertsch M., Pawlak N., Stachowiak A., Współczesne systemy produkcyjne, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011.

Golińska P., Tradycyjne i nowoczesne systemy produkcyjne, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011.

Brzeziński M., Organizacja i sterowanie produkcją. Projektowanie systemów produkcyjnych i procesów sterowania produkcją, Agencja Wydawnicza Placet, Warszawa, 2002.

Mazurczak J., Projektowanie struktur systemów produkcyjnych, Wydawnictwo Politechniki Poznańskiej, Poznań, 2002.

Sure D.R., Manufacturing Facilities. Location, Planning and Design , third edition, CRC Press, Taylor & Francis Group, Boca Raton, London, New York, 2009.

#### Additional

Kosieradzka A. (red.), Podstawy zarządzania produkcją. Ćwiczenia, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2008.

Boszko J., Struktura organizacyjna przedsiębiorstwa i drogi jej optymalizacji, WNT, Warszawa, 1973.

Grzelczak A., Werner-Lewandowska K, Eliminating Muda (Waste) in Lean Management by Working Time Standardization, Arabian Journal for Science and Engineering, 2016, vol. 6, iss. 3, 2016.

Siewczyńska M., Grzelczak A., Factors Affecting the Implementation Of BIM in A Design Office as Part of the Industry 4.0 Idea, 37th IBIMA Conference: 30-31 May 2021, Cordoba, Spain.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	35	1,5
Student's own work (literature studies, preparation for tests/exam, project preparation) <sup>1</sup>	90	3,5

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