

SYLLABUS

Name:**Name in Polish:** Elastyczne systemy produkcyjne**Name in English:** Flexible manufacturing systems**Information on course:**

Course offered by department:	Faculty of Organisation and Management
Course for department:	Silesian University of Technology
Study level and form:	Bachelor's degree, Full-time
Term:	winter semester 2023/2024
Coordinator of course edition:	Grzegorz Strozik, PhD, Professor of SUT

Default type of course examination report:

PASS (ZAL)

Language:

English

Course homepage:<https://platforma.polsl.pl/roz/course/view.php?id=1072>**ECTS**

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Short description:

The aim of the course is to provide students with practical knowledge in the field of flexible production systems. Students learn the principles of operation, design methods and analysis of flexible production systems.

Description:

1. Flexibility:

- the concept and development of flexibility,
- flexible production automation,
- flexibility of technical means, technological process, production volume, product structure,
- division of automated flexible production means,

2. Features and properties of ESP.

3. Principles of operation of ESP.

4. Criteria for selecting automated flexible manufacturing means.

5. Building flexible production systems:

- ESP functional subsystems,
- machine tools at ESP,
- ESP control stations,
- auxiliaries,

6. Flow of items and tools in ESP.

7. Designing flexible production systems:

- ESP design methods,
- designing ESP functional subsystems,

10. Diagnostics and control in ESP,

11. Economic evaluation of flexible production systems:

- ESP assessment methods,
- assessment of non-measurable effects of ESP.

12. Development of flexible production systems:

- development of ESP in Poland,
- development of ESP in the world.

13. Production system development strategy and enterprise development strategy.

14. Technical and organizational aspects of ESP implementation.

Bibliography:

1. El Maragy H.A. (Ed.): Changeable and Reconfigurable Manufacturing Systems. Springer-Verlag, London, 2009.
2. Mohamed Z.: Flexible Manufacturing Systems: Planning Issues and Solutions. Taylor & Francis 2018.
3. Parrish D.J.: Flexible manufacturing. Elsevier Science & Technology Books, 1990.
4. Shivanand H.K.: Flexible Manufacturing System. New Age International, 2006.

5. Talavage J.: Flexible Manufacturing Systems in Practice. Design: Analysis and Simulation. CRC Press, 2020.
6. Templemeier H., Kuhn H.: Flexible Manufacturing Systems. Decision support for design and operation. John Wiley & Sons, 1993.
7. Tolio T. (Ed.): Design of Flexible Production Systems. Methodologies and Tools, Springer Berlin Heidelberg, 2008

Learning outcomes:

K1P_W12 – The student knows and understands the principles and methods of designing and optimizing production systems and processes, production planning and control, and the basics of flexible manufacturing systems

K1P_U07 – The student is able to design – in accordance with the given specification – and create a simple technical system and implement a technological process, using appropriately selected methods, techniques, tools and materials

K1P_U08 – The student is able to critically analyse the functioning of existing technical solutions and evaluate these solutions

K1P_K06 – The student is ready to cultivate and disseminate models of proper behaviour in the work environment and beyond, make independent decisions and critically evaluate his own actions, the actions of teams he manages and organizations in which he participates, and accept responsibility for the consequences of these actions

Assessment methods and assessment criteria:

Form and criteria of passing:

- developing tasks and obtaining positive grades for all tasks,
- the grade for the exercises is the average of the grades for all tasks,
- obtaining at least 50% of points in the written test,
- rules of resit examination - obtaining at least 50% of points in the written resit examination.
- the final grade is the sum of 50% of the grade for passing the lecture and 50% of the grade for passing the exercises,
- student's presence at classes is obligatory,
- the student is not obliged to participate in lectures.

Practical placement:

None