

# Methods and techniques of production management - course description

General information	
Course name	Methods and techniques of production management
Course ID	06.9-WM-ZiIP-ANG-D-09_22
Faculty	<a href="#">Faculty of Mechanical Engineering</a>
Field of study	Management and Production Engineering
Education profile	academic
Level of studies	Second-cycle studies leading to MSc degree
Beginning semester	winter term 2023/2024

Course information	
Semester	1
ECTS credits to win	3
Course type	obligatory
Teaching language	english
Author of syllabus	<ul style="list-style-type: none"><li>prof. dr hab. Taras Nahirnyy</li></ul>

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	15	1	-	-	Credit with grade
Project	30	2	-	-	Credit with grade

## Aim of the course

The transfer and consolidation of basic knowledge in production management and services that will be used in the further education process and will then prove useful in future professional work.

## Prerequisites

Organisation of production systems. Management of projects and innovations.

## Scope

### Lecture

Management of basic operations, management rules, basic operational management and financial management, profitability limits. The traditional and concurrent product development process. Management of diversity: revenue-contribution/input chart, the Pareto-ABC method, the Ischikawa diagram. Value analysis. Quality, comprehensive quality management, FMEA. Reliability of the product and system. Product life cycle. Location of the enterprise, location of facilities and workplaces, analysis of the sequence of operations. Design of pipelines, method of line balancing. Maintenance service of production equipment, rules for the organisation of repairs. Designing production flow, comparative analysis, balancing pipelines. Statistical control of the production process, control charts and random sampling. The computer aided control of basic activity. Basic forecasting techniques. Calendar planning, scheduling of performance deadlines and work assignment. Inventory management, independent and dependent demand, material specification and product structure, ways to reduce an inventory of material. Planning and production control systems: MRP, MRP II, ERP, "*Just-in-Time*", Kanban, OPT. Project management, material requirements planning. Supply, evaluation of suppliers.

### Project

Issues relating to projects include: SWOT analysis, Pareto-ABC method, value analysis, FMEA, the principles of pipeline design, the line balancing method, production scheduling in conditions of variable demand

## Teaching methods

Conventional lecture.

Project: presentation, round-table discussion and the exchange of ideas.

## Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
The student has orderly, theoretical knowledge for organising production systems.	<ul style="list-style-type: none"><li><a href="#">K_W12</a></li></ul>	<ul style="list-style-type: none"><li>an evaluation test</li><li>carrying out laboratory reports</li></ul>	
The student is able to assess the usefulness and applicability of the latest techniques and technologies in the area of Management and Production Engineering, in terms of quality and modern marketing.	<ul style="list-style-type: none"><li><a href="#">K_U20</a></li></ul>	<ul style="list-style-type: none"><li>an observation and evaluation of the student's practical skills</li></ul>	

Outcome description	Outcome symbols	Methods of verification	The class form
The student has an orderly, theoretical knowledge of project management and innovation.	• <a href="#">K_W13</a>	<ul style="list-style-type: none"> <li>• a quiz</li> <li>• an observation and evaluation of the student's practical skills</li> </ul>	
The student is able to think and act both creatively and entrepreneurially.	• <a href="#">K_K06</a>	<ul style="list-style-type: none"> <li>• an observation and evaluation of the student's practical skills</li> </ul>	
The student understands the basics, the techniques, the tools and the materials used for solving complex, production engineering tasks	• <a href="#">K_W18</a>	<ul style="list-style-type: none"> <li>• a project</li> <li>• an evaluation test</li> </ul>	• Lecture
The student is able to obtain information from literature, databases and other sources and is able to integrate, interpret and critically evaluate it, as well as draw conclusions, therefrom, both formulating it and sufficiently justify opinions on it.	• <a href="#">K_U01</a>	<ul style="list-style-type: none"> <li>• a project</li> <li>• an observation and evaluation of the student's practical skills</li> </ul>	
The student is able to formulate and solve tasks, related to production engineering and management, applying a systemic approach while taking into account economic aspects.	• <a href="#">K_U17</a>	<ul style="list-style-type: none"> <li>• an observation and evaluation of the student's practical skills</li> <li>• carrying out laboratory reports</li> </ul>	

## Assignment conditions

### Lecture

Grades awarded on the basis of a written test, covering verification of basic knowledge.

### Project

The assessment consists of two components; one assesses the skills, related to the implementation of project tasks and the preparation of the report, while the other grade is awarded for the student's "*defence*" of the report on the implementation of the project.

Final rating: the arithmetical mean of grades from individual classes.

## Recommended reading

1. Muhlemann A.P., Oakland J.S., Lockyer K.G., Zarządzanie produkcją i usługami, WNT, Warszawa, 1997
2. Matuszek J., Inżynieria Produkcji. Skrypt Politechnika Łódzka, 2000.
3. Durlik I., Inżynieria Zarządzania. Strategia i Projektowanie Systemów Produkcyjnych T. 1 i 2. Agencja Wydawnicza Placet, 2004.

## Further reading

1. Duraj J., Podstawy Ekonomiki Przedsiębiorstwa, Polskie Wydawnictwo Ekonomiczne 2000.
2. Jonson R., Chambers S., Harland Ch., Harrison A., Slack N., Zarządzanie działalnością operacyjną. Analiza przypadków.
3. Dwiliński L.: Zarządzanie produkcją. Oficyna Wydawnicza Politechniki Warszawskiej. Warszawa, 2002.
4. Brzeziński M. (red.), Organizacja i sterowanie produkcją, Placet, Warszawa, 2002
5. Waters D., Zarządzanie operacyjne : towary i usługi Warszawa, PWN, 2001.

## Notes

Modified by dr inż. Tomasz Belica (last modification: 12-04-2023 23:05)

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