

COURSE GUIDE

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| <u>Subject name</u> | Processes And Production Technologies |
| <u>Course of study</u> | Quality and Production Management |
| <u>The form of study</u> | Full-time |
| <u>Level of qualification</u> | First |
| <u>Year</u> | I |
| <u>Semester</u> | I |
| <u>The implementing entity</u> | Department of Production Engineering and Safety |
| <u>The person responsible for preparing</u> | Dr inż. Manuela Ingaldi |
| <u>Profile</u> | General academic |
| <u>Course type</u> | principal |
| <u>ECTS points</u> | 4 |

TEACHING METHODS – NUMBER OF HOURS PER SEMESTER

| LECTURE | CLASS | LABORATORY | PROJECT | SEMINAR |
|----------------|--------------|-------------------|----------------|----------------|
| 30 | 15 | | | |

COURSE AIMS

- C1. Acquiring knowledge about modern technologies of obtaining materials widely used in technology and economy.
- C2. To provide students with basic knowledge about the structure and classification of modern production and manufacturing processes.
- C3. Familiarize students with selected production processes.

ENTRY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

- 1. Basic knowledge in mathematics, management engineering and microeconomics.
- 2. Ability to perform mathematical tasks to solve the given tasks.
- 3. Ability to use various sources of information in this manual and technical documentation.
- 4. The ability to work independently and in a group.

LEARNING OUTCOMES

- EU 1- Student has theoretical knowledge about the role of production systems in modern economy.
- EU2 - Student is able to analyze and identify production processes.
- EU 3- Student has the ability to recognize and classify basic types of production processes.
- EU 4- Student has the ability to use literature sources to broaden his knowledge.

COURSE CONTENT

| Type of teaching – LECTURES 15 HOURS | No. of hours |
|---|---------------------|
| W 1- Basic definitions related to the system and the manufacturing system and its organization. | 3 |
| W 2 – Product and its features. | 1 |
| W 3 – Quality of the product. | 2 |
| W 4 – The manufacturing process and its characteristics. | 1 |
| W 5 - General characteristics of the manufacturing technique due to the product features and the requirements set by the manufacturing process. | 1 |
| W 6 - Selected manufacturing processes. | 16 |
| W 7 - Basic processes and technologies for processing various forms of energy. | 1 |
| W 8 - Functional structure of the manufacturing process - examples. | 1 |
| W 9 - Logistics in production. | 1 |
| W 10 - Planning of the manufacturing process, including: the size of production, process efficiency, diversity of manufactured products. | 2 |
| W 11 - Simulation methods of optimization of the manufacturing process. | 1 |
| Type of teaching – CLASS 15 HOURS | No. of hours |
| C1 - Introduction to the subject. Overview of requirements and rules of the subject.. | 1 |
| C2 - Material balance and its elements. | 3 |
| C3 – Rolling and drawing. | 1 |
| C4 - Molding. | 1 |
| C5 - Forging. | 1 |
| C6 - Injection molding. | 1 |

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| C 7 - Punching and bending. | 1 |
| C8 – Cutting and punching. | 1 |
| C9 - Machining: milling, drilling and boring, planing, chiselling, grinding, galvanizing, threading, dragging. | 2 |
| C10 - Bonding: welding, welding, brazing, bonding, sintering. | 2 |
| C11 Final test | 1 |

TEACHING TOOLS

1. Books and monographs
2. Audiovisual presentation
3. Case study

WAYS OF ASSESSMENT (F – FORMATIVE, P – SUMMATIVE)

- F1. Evaluation of the implementation tasks in the classroom.
 F2. Observation of students' work in the classroom.
 P1. Final test.

STUDENT WORKLOAD

| Form of activity | | Average number of hours for realization of the activity | | |
|--|---------|---|----------|------|
| | | [h] | ECTS | ECTS |
| Contact hours with the teacher | LECTURE | 30 | 1.2 | 1.8 |
| Preparing to test | | 15 | 0.6 | |
| Contact hours with the teacher | CLASSES | 15 | 0.6 | 1.2 |
| Preparing to classes | | 15 | 0.6 | |
| Getting Acquainted with the indicated literature | | 15 | 0.6 | 0.6 |
| Consultation | | 10 | 0.4 | 0.4 |
| TOTAL NUMBER OF HOURS / ECTS CREDITS FOR THE COURSE | | 75 | 3 | |

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

Basic resources:

1. Kurzak L. Production and Services Processes in Enterprises. Częstochowa : Wydaw. Wydz. Zarządzania Politechniki Częstochowskiej, 2006.
2. Avard P. J., Cross J. Workshop Processes and Materials I. Macmillan Technician Series. 1977 (available on springer – pc at university: <https://link.springer.com/book/10.1007/978-1-349-03106-1>).
3. Klocke F. Manufacturing Processes 1. RWTHedition 2011 (available on springer – pc at university: <https://link.springer.com/book/10.1007/978-3-642-11979-8>).
4. Klocke F. Manufacturing Processes 2. RWTHedition 2009 (available on springer – pc at university: <https://link.springer.com/book/10.1007/978-3-540-92259-9>).
5. Klocke F. Manufacturing Processes 4. RWTHedition 20013 (available on springer – pc at university: <https://link.springer.com/book/10.1007/978-3-642-36772-4>).

Supplementary resources:

1. Pacan A., Ingaldi M., Czajkowska A. Zarządzanie bezpieczeństwem i produkcją z

uwzględnieniem Lean Manufacturing. Oficyna Wydawnicza Stowarzyszenia Menedżerów Jakości i Produkcji Częstochowa 2016

2. Knosala R (red.) Inżynieria produkcji: kompendium wiedzy. Warszawa: Polskie Wydawnictwo Ekonomiczne, 2017.
3. Journal: Production Engineering Archives.
4. Program: How is it made? Galileo etc.

TEACHERS (NAME, SURNAME, ADRES E-MAIL)

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MATRIX OF LEARNING OUTCOMES REALISATION

| Learning outcome | Reference of given outcome to outcomes defined for whole program (PRK) | Course aims | Course content | Teaching tools | Ways of assessment |
|-------------------------|---|--------------------|-----------------------|-----------------------|---------------------------|
| EU1 | K_W05, K_U04, K_K02 | C1-C3 | W1-W11, C1-C11 | 1, 2, 3 | F1, F2, P1 |
| EU2 | K_W02, K_U06, K_K02 | C2, C3 | W1-W11, C1-C11 | 1, 2, 3 | F1, F2, P1 |
| EU3 | K_W09, K_U06, K_K04 | C3 | W1-W11, C1-C11 | 1, 2, 3 | F1, F2, P1 |
| EU4 | K_W02, K_U01, K_U11 | C1-C3 | C1-C11 | 1, 2, 3 | F1, P2, |

FORM OF ASSESSMENT - DETAILS

| | grade 2 | grade 3 | grade 4 | grade 5 |
|-----|--|---|---|--|
| EU1 | The student has not theoretical knowledge about the role of production systems in modern economy | The student has very little theoretical knowledge of the role of production systems in the modern economy | Student has theoretical knowledge about the role of production systems in modern economy | The student has mastered the theoretical knowledge of the role of production systems in the modern economy and can express his opinion about it. |
| EU2 | Student is not able to analyze and identify production processes. | Student is able to identify production processes. | Student is able to analyze and identify production processes. | Student is able to analyze and identify production processes and comment result of the analyzes. |
| EU3 | Student does not have the ability to recognize and classify basic types of production processes. | Student has the ability to recognize or classify only a few basic types of production processes. | Student has the ability to recognize and classify chosen basic types of production processes. | Student has the ability to recognize and classify all basic types of production processes. |

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| EU4 | Student does not have the ability to use literature sources to broaden his knowledge. | Student has the ability to use literature sources indicated by the teacher. | Student alone looks for additional literature sources in order to broaden his knowledge. | Student deepens his knowledge by searching for additional literature sources, is able to compare information contained in them, can draw conclusions from them. |
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ADDITIONAL USEFUL INFORMATION ABOUT THE COURSE

1. Information where presentation of classes, instruction, subjects of seminars can be found, etc. - presented to students during first classes, if required by the formula classes are sent electronically to the e-mail addresses of individual dean groups.
2. Information about the place of classes - Information can be found on the website of the Faculty of Management.
3. Information about the timing of classes (day of the week / time) - Information can be found on the website of the Faculty of Management
4. Information about the consultation (time + place) - Information can be found on the website of the Faculty of Management

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Coordinator