



Learning outcomes

| Major field of study: Management and Production Engineering | | | |
|--|---|--|----------------------|
| Level of education: First-cycle studies (Bologna first cycle) | | | |
| Educational profile: General academic | | | |
| Symbol | Major field of study – learning outcomes | Assignations to the generic learning outcomes in The Polish Qualifications Framework (PQF) | |
| | | Tech./Soc. | Eng. |
| KNOWLEDGE | | | |
| Students are expected to have attained the following knowledge: | | | |
| K_W01 | Knowledge of mathematics including algebra, analysis, statistics, financial mathematics, operations research, including the mathematical methods necessary to solve engineering problems, problems in the area of economics and management including the processes of mathematical modelling. | T1A_W01 T1A_W07 | InzA_W02 |
| K_W02 | Knowledge of physics, including mechanics (statics, kinematics, dynamics), fluid mechanics, thermodynamics, strength of materials, optics, electricity and magnetism. | T1A_W01 T1A_W02 T1A_W07 | InzA_W02 |
| K_W03 | Elementary knowledge of the law including business law and intellectual property rights. | T1A_W08 T1A_W10 | InzA_W03 |
| K_W04 | Elementary knowledge of computer networks and operating systems, necessary to install, operate and maintain basic Informatics Tools such as office suites, engineering graphics programs, computational programs and programs for modelling. | T1A_W03 S1A_W06 | InzA_W01 |
| K_W05 | Elementary knowledge of computer science including an analysis of algorithms, programming with object-oriented languages, building simple databases and knowledge of the possibilities of using multimedia techniques. | T1A_W03 S1A_W06 | InzA_W02 |
| K_W06 | Knowledge regarding the creation and analysis of technical documentation with elements of engineering design with the use of graphical and computational programs. | T1A_W04 | InzA_W02 |
| K_W07 | Knowledge on materials used in the manufacturing processes of products and technical equipment, and on wear processes during exploitation. | T1A_W06 | InzA_W01 InzA_W05 |
| K_W08 | Knowledge regarding the metrology and measurement systems in conjunction with the quality in the entire life cycle of a product or manufactured article. | T1A_W04 | InzA_W02 |
| K_W09 | Knowledge regarding production processes and manufacturing techniques with taking account of quality assurance issues. | T1A_W04 | InzA_W04 InzA_W05 |
| K_W10 | Knowledge covering economic phenomena and economic processes in macro and micro aspects with taking account of the role of finance. | S1A_W05 S1A_W06 | InzA_W03 InzA_W01 |
| K_W11 | Elementary knowledge of control, foundations of automation and elements of robotics, oriented on production processes. | T1A_W03 | InzA_W02 |
| K_W12 | Knowledge of keeping records of economic events in the company in the field of accounting including the use of computer systems. | S1A_W11 | InzA_W03 InzA_W04 |
| K_W13 | Basic knowledge of management of an organization in a market economy in a manner favourable for development. | T1A_W09 T1A_W11 | InzA_W04 |



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| K_W14 | Basic knowledge regarding the management of production processes and services in the logistics supply chain, taking account of the role of quality in contemporary organizations. | T1A_W04 | InzA_W02 |
| K_W15 | Basic knowledge regarding the product life cycle in conjunction with the issues of ecology and environmental protection. | T1A_W06 | InzA_W01 |
| K_W16 | Elementary knowledge on methods of launching new products and services in a market economy conditions. | T1A_W05 T1A_W11 S1A_W11 | InzA_W02 |
| K_W17 | Elementary knowledge and understanding of the importance of the humanities contents in the fields of technology and business. | T1A_W08 | InzA_W03 |
| K_W18 | Basic knowledge on development trends in the management and production engineering with taking account of innovation activities. | T1A_W05 | InzA_W03 |

SKILLS

Students are expected to have attained the following skills:

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| K_U01 | Ability to collect information from literature, databases, and other sources; to connect the obtained information, to analyse and interpret data, draw conclusions, formulate and justify opinions. | TA1_U01 | |
| K_U02 | Ability to work individually and in a team, ability to estimate the amount of time needed for execution of the commissioned tasks; to schedule works in order to ensure meeting deadlines. | TA1_U02 | |
| K_U03 | Ability to develop a simple documentation regarding the execution of engineering and organizational tasks, ability to prepare a report on the task execution process and its results. | TA1_U03 | |
| K_U04 | Ability to prepare and give a multimedia presentation on the results of the engineering task. | TA1_U04 | |
| K_U05 | Ability to use the English language sufficiently for communication and reading comprehension of basic texts associated with production engineering and management. | TA1_U01 TA1_U06 | |
| K_U06 | Ability to carry on self-education in order to solve new tasks and enhance professional competences. | TA1_U05 | |
| K_U07 | Ability to build a simple databases (MS Access) related to the management issues and develop simple applications using modern methods and programming languages. | TA1_U01 TA1_U07 TA1_U08 | InzA_U01 |
| K_U08 | Ability to analyse and understand a quality management systems documentation, to apply quality tools in the decision-making process. | TA1_U14 | InzA_U06 |
| K_U09 | Ability to perform basic measurements of geometric and electrical quantities related to the manufacturing process. | TA1_U08 | InzA_U01 |
| K_U10 | Ability to keep the accounts of a small business independently or to work in a team performing accounting services for a large organisation, with taking account of elements of the economic law including balance sheet law. | TA1_U12 SA1_U05 | |
| K_U11 | Ability to act in accordance with the intellectual property law, to use the Polish Patent Office's databases, to appreciate the value of the novelty of products and services. | TA1_U01 SA1_U03 | |
| K_U12 | Ability to perform simple financial analyses related to economic activities including elements of optimization. | TA1_U09 TA1_U12 SA1_U03 | InzA_U02 |



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| K_U13 | Ability to perform basic economic analyses of engineering activities associated with launching, upgrading and modernization of production. | TA1_U03 TA1_U09 TA1_U10 TA1_U12 | InzA_U02 InzA_U03 InzA_U04 |
| K_U14 | Ability to apply known mathematical models and methods and computer simulations in a process of analysis and evaluation of management and production decisions. | TA1_U07 TA1_U08 TA1_U09 | InzA_U01 InzA_U02 |
| K_U15 | Ability to see the linkage between engineering decisions and non-technical area, including environmental, economic and legal aspects. | TA1_U02 TA1_U10 | InzA_U03 |
| K_U16 | Ability to apply occupational safety and health rules and understand the importance of safety and health management system compliant with the PN-N-18000 standards. | TA1_U11 | |
| K_U17 | Ability to do simple strength analyses and motion analyses of material bodies with the use of classical methods of computing. | TA1_U09 TA1_U16 | InzA_U02 InzA_U08 |
| K_U18 | Ability to analyse and organise simple production systems taking account of the principles of production management. | TA1_U16 TA1_U13 | InzA_U05 InzA_U08 |
| K_U19 | Ability to judge the usefulness of basic methods and tools for solving simple engineering tasks in the field of production engineering, and organisational and managerial type of tasks. | TA1_U13 TA1_U15 | InzA_U05 InzA_U07 |

SOCIAL COMPETENCES

Students are expected to have attained the following social competences:

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| K_K01 | Understanding the need for and awareness of the possibilities of continuing educational advancement (second-cycle and third-cycle studies, postgraduate courses), which leads to an improvement of professional, personal and social competences. | T1A_K01 | |
| K_K02 | Awareness of the significance and the understanding of linkage between the engineering activities and the non-technical activities in the aspects of the environmental impact effects, and responsibility for decision-making. | T1A_K02 | InzA_K01 |
| K_K03 | Awareness of the importance of professional activity, compliance with the rules of professional ethics and respect for the diversity of views and cultures. | T1A_K05 | |
| K_K04 | Awareness of the responsibility for their own work and the willingness to subordinate to the principles of teamwork and accountability for collaborative tasks. | T1A_K03 T1A_K04 | |
| K_K05 | Capacity to think and act in an entrepreneurial way, with understanding of the needs of society and the laws of nature. | T1A_K06 | InzA_U02 |
| K_K06 | Awareness of a technical university graduate's social role, understanding the need to convey to the public, in a widely understandable way, information on achievements related to the field of study - "Management and production engineering". | T1A_K07 | |