

**Learning outcomes for *Mechatronics studies*
enrolments 2025/2026
first degree studies – educational applied profile**

The Polish Qualifications Framework Level – 6

Professional title obtained by a graduate – engineer

| Symbol | Learning outcomes for the <i>Mechatronics</i> major. After graduating the first degree studies in <i>Mechatronics</i> major, graduate: | Code of the component of description of the Polish Qualifications Framework – detailed characteristics P6S |
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| KNOWLEDGE | | |
| K_W01 | Student knows and understands at an advanced level the methods and theories explaining the complex dependencies in the field of exact science (mathematics, physics) necessary to formulate and solve tasks related to mechatronics | P6S_WG |
| K_W02 | Student has basic knowledge in the field of materials science, necessary to understand at an advanced level the complex relationships between mechatronic systems, the phenomena taking place there and the practical application of this knowledge in mechatronics | P6S_WG |
| K_W03 | Student has knowledge in the field of mechanical engineering, necessary to understand at an advanced level the complex relationships between mechatronic systems, the phenomena occurring there, and to apply this knowledge in practice through the use of appropriate methods, tools and technologies. | P6S_WG |
| K_W04 | Student has knowledge in the field of technical informatics, artificial intelligence and telecommunications, necessary to understand at an advanced level the complex dependencies of mechatronic systems and to apply this knowledge in practice through the use of appropriate methods, tools and technologies. | P6S_WG |
| K_W05 | Student has knowledge of automation, electronics and electrical engineering, necessary to understand at an advanced level the complex dependencies of mechatronic systems and to apply this knowledge in practice through the use of appropriate methods, tools and technologies. | P6S_WG |
| K_W06 | Student knows and understands selected specific issues in the field of technical computer science related to programming, computer networks, databases, computer networks and information security, embedded systems, internet of things and artificial intelligence. | P6S_WG |
| K_W07 | Student knows and understands selected specific issues in the field of engineering graphics as well as practical applications of this knowledge, including those related to the use of AI-powered tools. | P6S_WG |
| K_W08 | Student knows and understands selected specific issues in the field of designing automation systems and robotics and practical applications of this knowledge, including those related to the use of AI-powered tools. | P6S_WG |
| K_W09 | Student has knowledge of technical standards and norms as well as the life cycle of mechatronic devices, facilities and systems. | P6S_WG |
| K_W10 | Student knows and understands the basic issues related to obtaining information and issues related to distance learning and the practical | P6S_WG |

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| | application of this knowledge, including the significance and application of large language models in the educational process. | |
| K_W11 | Student knows and understands the basic concepts of intellectual property protection, copyright, industrial property. In addition, he can use the resources of Patent Information. | P6S_WK |
| K_W12 | Student knows and understands the general principles of the conduct and development of business and the various forms of personal entrepreneurship, with particular emphasis on the specificity of the mechatronic industry. | P6S_WK |
| K_W13 | Student knows and understands the basic economic, legal and ethical determinants of engineering activities, with the particular understanding of the legal, ethical and moral responsibility of the engineer in the context of constructed mechatronic systems. | P6S_WK |
| K_W14 | Student is familiar with the current state and the latest development trends in mechatronics, including those related to the use of AI-powered tools. | P6S_WK |
| K_W15 | Student has basic knowledge of management, with particular emphasis on: quality management, applying the principles of work organization and management, taking into account the principles of ergonomics and occupational health and safety, task planning and project management. A graduate can apply the above knowledge both in the role of an employee and running a business. | P6S_WK |
| SKILLS | | |
| K_U01 | Student is able to obtain information (in Polish Language and Foreign Language) through the selection of sources, including those related to the use of AI-powered tools, integrate them, make their interpretation, critical analysis and synthesis, as well as draw conclusions and formulate opinions. | P6S_UW |
| K_U02 | Student is able to use their knowledge to formulate and solve problems and perform tasks typical for professional activity in the mechatronics industry. | P6S_UW |
| K_U03 | Student has experience related to the maintenance of technical devices and systems typical for the mechatronics industry. | P6S_UW |
| K_U04 | Student has experience in solving practical engineering tasks, gained in an environment dealing with engineering issues, including those related to the use of AI-powered tools. | P6S_UW |
| K_U05 | Student has experience and skills to use the norms and standards applicable in the mechatronics industry. | P6S_UW |
| K_U06 | Student has language skills in the use of foreign language in mechatronics, allowing communication at B2 level. | P6S_UW |
| K_U07 | Student is able to use information and communication techniques with particular emphasis on the creation of project documentation, the use of engineering graphics (CAD software) for the purposes of implementing projects and smaller tasks in the field of mechatronics. | P6S_UW |
| K_U08 | Student is able to plan and carry out experiments, including measurements and computer simulations, interpret the obtained results and draw conclusions - with particular emphasis on modern AI-powered tools, typical for an engineer's workshop. | P6S_UW |
| K_U09 | Student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks. Student is able to make decisions in the context of the quality and effectiveness of action and economic | P6S_UW |

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| | realities as to the participation of simulation and experimental methods in the implementation of engineering projects. | |
| K_U10 | Student is able to see and diagnose non-technical aspects, including legal, social, environmental and economic aspects in the context of the functioning of mechatronic systems at the stage of formulating and solving design, construction, implementation and operational tasks. | P6S_UW |
| K_U11 | Student has the skills to work in an industrial environment and knows the safety rules related to work in industry. | P6S_UW |
| K_U12 | Student is able to estimate the costs, initially assess the economic effects of engineering activities. | P6S_UW |
| K_U13 | Student is able to evaluate the effectiveness, functionality and economics of existing devices and mechatronic systems. | P6S_UW |
| K_U14 | Student is able to see problems, imperfections in functioning or newly designed mechatronic systems, identify the problem and formulate a specification of simple solutions for the perceived simple engineering problems. | P6S_UW |
| K_U15 | Student is able to assess the suitability and choose the appropriate methods tools and materials to solve a simple engineering task in the field of Mechatronics. | P6S_UW |
| K_U16 | Student is able to use appropriate methods, techniques, tools, AI-supported technical solutions - in accordance with the given specification - to design and implement a simple device, object, system or process, typical for Mechatronics. | P6S_UW |
| K_U17 | Student is able, using specialized terminology, to prepare documentation in Polish Language or Foreign Language and a presentation of an engineering project in the field of mechatronics. | P6S_UK |
| K_U18 | Student is able to take part in a debate - to present and evaluate various opinions and positions, and to discuss them. | P6S_UK |
| K_U19 | Student is able to work individually and in an engineering team and in interdisciplinary teams. Student has the skills and knowledge of techniques allowing for efficient communication with other team members | P6S_UO |
| K_U20 | Student is able to plan and implement self-education during professional work as well as take care of the physical condition. | P6S_UU |
| SOCIAL COMPETENCE | | |
| K_K01 | Student is ready to critically assess their knowledge and the content received. | P6S_KK |
| K_K02 | Student correctly identifies and resolves dilemmas related to the performance of the profession by recognizing the importance of knowledge in solving cognitive and practical problems and consulting experts. | P6S_KK |
| K_K03 | Student is able to properly identify priorities to achieve the goal set by himself or others. | P6S_KK |
| K_K04 | Student understands the need to communicate to society - incl. through the mass media - information about technological achievements and other aspects of an engineer's activity and is able to convey such information in a commonly understood manner. | P6S_KO |
| K_K05 | Student is ready to initiate actions for the public interest. | P6S_KO |
| K_K06 | Student is able to think and act in an entrepreneurial and creative manner and is ready to start up and develop individual entrepreneurship in the mechatronics industry. | P6S_KO |
| K_K07 | Student the student is able to inspire group members, be the creator and animator of the organization of its work, take various roles and challenges | P6S_KR |

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| | in the group, obeying the rules of professional ethics and caring for the achievements and traditions of the profession. | |
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