

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Mechatronic Design</b>		Code <b>1010641261010640329</b>
Field of study <b>Mechanical Engineering</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>3 / 6</b>
Elective path/specialty <b>Industrial Mechatronics</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>1</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>2 100%</b>
<b>Responsible for subject / lecturer:</b> Piotr Perz email: piotr.perz@put.poznan.pl tel. 61 665 2054 Faculty of Transport Engineering ul. Piotrowo 3, 60-965 Poznań		<b>Responsible for subject / lecturer:</b> Piotr Perz email: piotr.perz@put.poznan.pl tel. 61 665 2054 Faculty of Transport Engineering ul. Piotrowo 3, 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Getting to know the construction of machines, the basics of electrical engineering, the basics of computer science, elements of the mechatronic system.
2	<b>Skills</b>	Independent formulation of a technical problem, construction record in accordance with the principles of technical drawing
3	<b>Social competencies</b>	Understanding the need to broaden their competence, readiness to cooperate within the team
<b>Assumptions and objectives of the course:</b> -Knowledge of the structure and elements of the mechatronic system. Acquiring the skills of interdisciplinary approach to issues related to machine design.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Has basic knowledge of linear measurement methods, stress measurements, strains, velocities, temperatures and fluid streams, including measurements of these quantities on the electrical path - [M1_W13]		
2. It has elementary knowledge about electric drives in machines, including three-phase current, DC and AC motors, frequency and voltage converters, and power electronics. - [M1_W15]		
3. Has elementary knowledge about automation systems, microcontrollers, control algorithms, automation and industrial robots, electronic navigation systems used in machines and wired and wireless communication systems in local computer networks used in machines - [M1_W16]		
4. He is familiar with the latest trends in the construction of machines, ie, automation and mechatronics, automation of design processes and machine design, increase of safety and comfort of use, the use of modern construction materials - [M1_W18]		
5. Has elementary knowledge about the impact of changes in technology on the organization of social life and the health and psyche of individuals in human-machine contact. - [M1_W22]		
<b>Skills:</b>		
1. Is able to search in catalogs and on manufacturers' websites ready machine components for use in own projects. - [M1_U02]		
2. Is able to organize and substantively guide the process of designing and operating a simple machine from the group of machines from the group covered by the selected specialty. - [M1_U25]		
<b>Social competencies:</b>		

1. Is ready to critically evaluate your knowledge and content you receive - [M1_K01]
2. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in the event of difficulties in solving the problem - [M1_K02]
3. He is ready to think and act in an entrepreneurial way - [M1_K05]

<b>Assessment methods of study outcomes</b>		
-Written lecture, pass the exercises.		
<b>Course description</b>		
-The essence of the mechatronic system, the basic elements of the system. The construction of actors, sensors, their functions and the principles of selection. Sending and processing signals. Creating a system model. Structure of the design and construction process of the mechatronic device. Stages of mechatronic design. Design assumptions, system modeling, design principles of mechanical, electronic and control systems, selection and construction of components, identification. Examples of mechatronic constructions		
<b>Basic bibliography:</b>		
1. Heimann B., Gerth W., Popp K.: Mechatronika. Komponenty. Metody. Przykłady, PWN, Warszawa 2001, 2. Gawrysiak M.: Analiza systemowa urządzenia mechatronicznego, Wyd. Politechniki Białostockiej, Białystok 1997.		
<b>Additional bibliography:</b>		
1. Uhla T. Projektowanie mechatroniczne zagadnienia wybrane, Kraków 2007		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Participation in lectures	30	
2. Fixing the content of the lecture	4	
3. Consultations regarding material provided during lectures	2	
4. Preparation for the exam	4	
5. Participation in the exam	2	
6. Preparation for exercises	4	
7. Participation in the exercises	15	
8. Fixing the content of exercises	4	
9. Consultations regarding the material provided during the exercises	2	
10. Preparation to pass the exercises	4	
11. Participation in passing the exercises	2	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	73	2
Contact hours	53	2
Practical activities	0	0