STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Passing Project**	Code **1010642121010644451**

Field of study **Mechanical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 2**

Elective path/specialty **Mechatronics**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**

No. of hours				No. of credits
Lecture: **-** Classes: **-** Laboratory: **-** Project/seminars: **4**				**6**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **6** **100%** **6** **100%**

Responsible for subject / lecturer:	Responsible for subject / lecturer:
dr inż. Ryszard Raczyk email: ryszard.raczyk@put.poznan.pl tel. 61 665 2054 Wydział Maszyn Roboczych i Transportu ul. Piotrowo 3, 60-965 Poznań	dr inż. Krzysztaf Talaśka email: krzysztof.talaska@put.poznan.pl tel. 61 224-4512 Wydział Maszyn Roboczych i Transportu ul. Piotrowo 3, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Mechanics and strength of materials. Fundamentals of machine design. Basics of hydraulics and pneumatics. Mechatronics. Fundamentals of computer science engineering.
2	**Skills**	Defining functions and tasks of the machines. Designing mechatronic constructions using CAD software. Control Systems Design and regulation process. The incorporation of automation and robotics.
3	**Social competencies**	Acquiring engineering knowledge in the field of mechatronics, in particular in the field of mechanical engineering.

Assumptions and objectives of the course:

Implementation of individual mechatronic design of a mechanical device having elements of automation and robotics.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. He/she has an extended knowledge in the area of ??information concerning programs for engineering calculations and computer simulation of physical systems - [K2A_W05]

2. He/she knows the modern methods of computer graphics engineering and theoretical basis for the calculation using finite elements method - [K2A_W06]

3. He/she has a knowledge about safety and ergonomics in the design and operation of machines and the machines that pose threats to the environment - [K2A_W08]

4. He/she has in-depth knowledge of design and principles of action and classification of machinery - [K2A_W18]

5. He/she has a general knowledge of the principles and methods of designing machines, in particular, calculation methods - [K2A_W19]

Skills:

1. He/she can use a popular system for numerical computations to program a simple task with a small number of degrees of freedom - [K2A_U03]

2. He/she can perform a complex project of working machine using modern CAD ??tools, including tools for finite element method calculations - [K2A_U07]

3. He/she can advise on the selection of machines for the processing line as part of a group of machines - [K2A_U15]

4. Is able to develop technical description and design for complex machines from the selected group of machines - [K2A_U16]

Social competencies:
1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others. - [K2A_K01]
2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment, is aware of responsibility for decisions. - [K2A_K02]
3. Is able to interact in a group taking on the different roles. - [K2A_K03]

Assessment methods of study outcomes
Completion of the course is based on the project individually performed by the student.

Course description
Designing the geometric and physical structure of mechanical device. Kinematics and dynamics of motor components, design propulsion systems. Mechatronic control and regulation, control, electric, pneumatic and hydraulic. The use of programmable controllers. Sensors. Robotics. Computer Engineering.

Basic bibliography:

1. Dietrich M.: Podstawy konstrukcji maszyn, WNT Warszawa 1999, 3 tomy

2. Schmid D.: Mechatronika, Europa-Lehrmittel, polish edition REA Warszawa 2002,

Additional bibliography:

1. Honczarenko J.: Elastyczna automatyzacja wytwarzania, obrabiarki i systemy obróbkowe, WNT Warszawa 2000

Result of average student's workload

Activity	Time (working hours)
1. Preparation to the classes	20
2. Classes	15
3. Preparation of the project	100
4. Consultations	15
5. Preparing to pass	5
6. Participation in the pass	2

Student's workload

Source of workload	hours	ECTS
Total workload	157	6
Contact hours	32	1
Practical activities	157	6