POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mechanics and Mechatronics

Course

Field of study	Year/Semester
Electrical Engineering	2 / 4
Area of study (specialization)	Profile of study
	general academic
Level of study	Course offered in
First-cycle studies	polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15		
Tutorials	Projects/seminars	

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Dorota Stachowiak

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tel. 61 665 3950

Faculty of Control, Robotics and Electrical
Engineering

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Students starting this subject should have a basic knowledge of: in the field of physics, basics of electrical engineering, mechanics and computer science. He should also be able to use literature sources available in both print and electronic versions, integrating acquired information and be aware of the need to expand his competencies and knowledge.

Course objective

The main goal is to obtain knowledge of the basics of mechatronics. Introduction to the design and principle of work of mechatronic devices.

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Course-related learning outcomes

Knowledge

1. Define the concepts of mechatronics, mechatronic system. Describe the role of sensor and actuator in the mechatronic system.

2. Know the application of MEMS.

Skills

1. Describe the essence of mechatronic systems.

2. Search of information from literature, databases, and other sources in field of mechatronics.

Social competences

1. Can deal with with selected mechatronic systems and demonstrate confidence in activities requiring knowledge of mechatronic devices.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:

-assessment of knowledge and skills by the completion of a written test,

-continuous evaluation for each course (rewarding activity and quality of the expression).

Extra points for the activity in the classroom, and in particular for:

-discussion and proposition of additional aspects of the subjects,

- comments related to the improvement of teaching materials,

- quality and diligence of the developed reports.

Programme content

Definitions, purpose and scope of mechatronics. Mechatronic systems. Subsystems integration of mechanical, hydraulic, electrical and information technology in complex mechatronic systems. Sensors and actuators. Actuators electromagnetic, electrostatic, piezoelectric, pneumatic and hydraulic. Microelectromechanical systems (MEMS) microactuators, microsensors, the use of silicon technology. Smart materials.

Teaching methods

- lecture with multimedia presentation supplemented with examples given on the board,

- interactive lecture with questions to students,

- student activity is taken into account during the course of the assessment process.

Bibliography

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Basic

1. Schmid D., Mechatronika, tłum. z niem. oprac. wersji pol. Olszewski M., Wyd. REA, Warszawa 2002.

2. Heimann B., Gerth W., Popp K.: Mechatronika. Komponenty ? metody ?przykłady. Warszawa: Wyd. Nauk. PWN 2001.

3. Turowski J., Podstawy Mechatroniki, Wyd. WSHE, Łódź 2008.

Additional

1. Bishop R. H.,The Mechatronics Handbook, Austin, Texas, CRC Press 2002

2. Gad-el-Hak M. The MEMS Handbook, CRC Press 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1
Classes requiring direct contact with the teacher	15	1
Student's own work (literature studies, preparation for tests) [1]	15	1

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[1] delete or add other activities as appropriate