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
Introduction to mechatronics

Course

Field of study	Year/Semester
Mechanical and Automotive Engineering	1/2
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	0	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

dr inż. Jarosław Adamiec

email: jaroslaw.adamiec@put.poznan.pl

Tel.No. 61 665 2054

Wydział Inżynierii Mechanicznej

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: physics, general mechanics, fundamentals of machine construction, engineering graphics, basics of electronics and electrical engineering

Skills: description of basic phenomena, construction of mechanical and electrical systems, analysis of technical and electrical documentation

Social competence: is aware of the responsibility for decisions made during the construction process

Course objective

Learning the structure and components of the mechatronic system.

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Course-related learning outcomes

Knowledge

Is aware of the latest trends in machine construction, i.e. automation and mechatronization, automation of machine design and construction processes, increased safety and comfort of operation, the use of modern construction materials.

Has extended basic knowledge necessary to understand specialist subjects and specialist knowledge about the construction, construction methods, manufacturing and operation of a selected group of working, transport, thermal and flow machines covered by the diploma path.

Has elementary knowledge of the impact of technology changes on the organization of social life as well as the health and psyche of individuals in human-machine contact.

Skills

Can plan and carry out the process of constructing uncomplicated machinery units or machines and formulate requirements for electronic components and automatic control systems for industry specialists in mechatronic systems.

Can draw a diagram and a simple machine element by hand in accordance with the rules of technical drawing.

Can interact with other people as part of teamwork (also of an interdisciplinary nature).

Social competences

Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on his own.

 Is ready to initiate actions for the public interest.

Is ready to fulfill professional roles responsibly, including:

- observing the rules of professional ethics and requiring this from others,

- caring for the achievements and traditions of the profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Short tests after the lecture. Testing from the lecture at the end of the semester.

Programme content

1Lecture: Introductory messages - definitions, interdisciplinarity, history. Construction of mechatronic systems - components and their role. Mechatronic system - examples. Sensorics - classification, construction and principle of operation. Actorics - classification, construction and principle of operation. Mechatronic drive - examples, construction and principle of operation. Communication network in a mechatronic system, e.g. AS-i (actuator - sensor - interface). Decision mechanism - examples, construction and principle of operation.

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Teaching methods

Lecture with multimedia presentation

Bibliography

Basic

1. Heimann B., Gerth W., Popp K.: Mechatronika, Komponenty, Metody, Przykłady, PWN, Warszawa 2001,,

2. Schmidt D.: Mechatronika, wydawnictwo REA, Warszawa 2002,

3. Świder J.: Sterowanie i automatyzacja procesów technologicznych technologicznych układów mechatronicznych, Wyd. Politechniki Śląskiej, Gliwice 2002.

Additional

1. Gawrysiak M.: Mechatronika i projektowanie mechatroniczne, Wyd. elektroniczne, Białystok 1997.

2. Urządzenia i systemy mechatroniczne, wydawnictwo REA, Warszawa 2009.

3. Olszewski M.: Podstawy mechatroniki, wydawnictwo REA, Warszawa 2006.

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	10	0,5

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[1] delete or add other activities as appropriate