



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basis of mechatronics

Course

Field of study

Safety Engineering

Area of study (specialization)

Year/Semester

1

Profile of study

Level of study

First-cycle studies

Form of study
full-time

Course offered in

Polish

Requirements

Number of hours

Lecture

15

Tutorials

Laboratory classes

15

Projects/seminars

Other (e.g. online)

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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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.

Course-related learning outcomes

Knowledge

1. knowledge of the origin and development of mechatronics
2. knowledge of the structure and operation of the sensors
3. knowledge of communication systems

Skills

1. identification of mechatronic systems
2. analyses of control systems used in mechatronic systems
3. diagnosing faults in mechatronic systems

Social competences

1. understands the impact of mechatronic systems on user safety
2. is aware of the environmental impact of mechatronic systems
3. is aware of the importance of non-technical aspects and effects of the engineer-mechatronics activities

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. Oral answers from laboratory preparation and report.

Programme content

The origin and development of mechatronics as a multidisciplinary science. The essence of the mechatronic system, basic components and their role in the system. General structure of sensors and actors. Role of processors and principles of communication in the system. Practical examples of



mechatronic systems (from the field of technological, manipulation, transport and common use machines).

Teaching methods

Lecture with a multimedia presentation. Laboratory handouts, laboratory workstations.

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	46	1,0
Classes requiring direct contact with the teacher	30	0,7
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	16	0,3

¹ delete or add other activities as appropriate