



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Introduction to mechatronics

Course

Field of study

Mechatronics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

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

Lecture: 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.

Laboratories: Sensorics. Actorics. Mechatronic drive. Communication network. Decision-making mechanism.

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	50	2,0
Classes requiring direct contact with the teacher	35	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	15	1,0

¹ delete or add other activities as appropriate