POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Introduction to mechatronics [N1Mech1>WDM]

Course

Field of study
Mechatronics

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
10

Laboratory classes
8

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators	Lecturers
	dr inż. Jarosław Adamiec jaroslaw.adamiec@put.poznan.pl
	dr inż. Jan Górecki jan.gorecki@put.poznan.pl

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:

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	75	3,00
Classes requiring direct contact with the teacher	40	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	35	1,00