



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Pre-graduate seminar

Course

Field of study

Mechatronics

Area of study (specialization)

Design and control of mechatronic devices

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

15

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

Prof. DSc. PhD. Eng. Andrzej Milecki

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Faculty of Mechanical Engineering

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge of the construction, operation, selection of elements and design of all components and the entire mechatronic device

Knowledge of modeling elements of mechatronic devices

Knowledge of advanced control methods and advanced drivers

Skills the design of mechanical and electronic systems

Ability to prepare the documentation of the devices



Course objective

Acquiring practical skills in designing mechatronic devices using theoretical modeling techniques, theoretical analyzes and computer simulations

Developing the assumptions of the master's thesis, reviewing the state of knowledge, performing calculations and selecting elements, designing a mechatronic device and writing a master's thesis

Course-related learning outcomes

Knowledge

Knows how to obtain and use scientific and technical information on mechatronic structures from various sources K_W09, 18

Knows how to develop theoretical and simulation models of the designed mechatronic device K_W09

He/She knows how to write scientific and technical studies, in particular knows the rules of writing MA theses K_W09, 18

Has focused knowledge of the specialties (Mechatronic Devices Design) KM K_W16, 17

He/She knows the basic principles of patenting and patent protection K_W18

Skills

Is able to gather information from the Internet, literature, databases and other properly selected sources in the field of mechatronics K_U01

He/She can use modeling in the selection of parameters of the device and its controller K_U08, 14

Is able to simulate and optimize the parameters and properties of the mechanical and electrical elements of the mechatronic device K_U14, 20

Is able to formulate patent claims and search patent libraries and define their scope of protection K_U14

Has the ability to self-study K_U05

Can communicate in the professional and other environments K_U02

He/She can prepare a well-documented technical study in Polish and English and give a presentation K_U04

Social competences

Understands the need for lifelong learning; can inspire and organize the learning process of other people K_K01

Can define priorities for the implementation of a specific task K_K04

Can cooperate and work in a group K_K03

Correctly identifies and resolves dilemmas related to the profession K_K05



Is aware of the social role of the engineer K_K07

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit on the basis of the presentation of issues related to education at the second degree of Mechatronics and the presentation of the master's thesis in the field of: literature review and patents, assumptions, goals, methods of solving the problem with the use of theoretical descriptions, modeling, simulation and analyzes.

Programme content

1. Acquainting with the requirements for master's thesis and with the course of the thesis preparation and defense process as well as with the course and requirements for the MA diploma examination.
2. Review of the knowledge acquired during the studies, MA - part 1.
3. Establishing and discussing the topics of master's theses
4. Recognition and gathering of knowledge and the state of the art, including patents in the field of the prepared thesis.
5. Preparation of the scope and plan of work as well as execution of preliminary preparatory work for the thesis
6. Performing and delivering a presentation of the initial MA thesis

Teaching methods

Presentations and discussions on thesis

Bibliography

Basic

1. Heimann B., Gerth W., Popp K. Mechatronik, Carl Hanser Verlag, 1998 .
2. Mechatronic Systems Design Methods, Models, Concepts, Janschek, Klaus 2012
3. How to Write a Master's Thesis Second Edition, Yvonne N. Bui

Additional

Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering, W. Bolton, 2015



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

¹ delete or add other activities as appropriate