COURSE DESCRIPTION CARD - SYLLABUS

Course name
Digital technology

Course

Field of study	Year/Semester
Automatic Control and Robotics	2 / 4
Area of study (specialization)	Profile of study
	general academic
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
part-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
8	18	
Tutorials	Projects/seminars	

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Konrad Urbański

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Wydział Automatyki, Robotyki i Elektrotechniki

ul. Piotrowo 3A 60-965 Poznań

Prerequisites

A student beginning the course should have knowledge and skills in the basics of programming, electronics, numerical methods and simulation. He or she should also have the ability to obtain information from indicated sources.

Course objective

The student acquires knowledge of the parameters and operation of basic digital systems. He or she acquaintses with methods of designing digital systems and ways of their realization in programmable systems.

Course-related learning outcomes

Knowledge

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Has detailed knowledge about the construction and operation of basic logic gates. Knows methods of simplifying logical functions.

Skills

Able to minimize logical functions and design a system that performs logical functions. Can program an FPGA which performs logical functions.

Social competences

Has the ability to work in a team.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified by the colloquium carried out at the last lecture. Students will have access to a list of issues in force at the colloquium. Skills acquired as part of the laboratory are verified on an ongoing basis during the classes.

Programme content

1. Basic issues

2. Asynchronous and synchronous systems

3. Analog-to-digital and digital-to-analog converters

4. Principle of basic logic gateways

5. Simplifying logic functions

6. Flip-flops, counters, registers, binary encoders/decoders, multiplexers/demultiplexers

7. Digital integrated circuits and microprocessors

Teaching methods

The training methods used:

- a lecture with a multimedia presentation (including: drawings, photographs, animations, sound, films) supplemented by examples given on the board

- a lecture conducted in an interactive way with formulation of questions to a group of students

- presentation of a new topic preceded by a reminder of related content known to students from other subjects

laboratories:

- working in teams

- computational experiments and performance of the tasks given by the instructor.

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Bibliography

Basic

1. Podstawy techniki cyfrowej, A. Skorupski, WKŁ 2004 (IBUK@PP)

2. Podstawy elektroniki cyfrowej,J. Kalisz, WKŁ 2007

Additional

1. The Art of Electronics, P. Horowitz, W. Hill, Cambridge University Press; 2015

2. The Essence of Digital Design, B. Wilkinson, Pearson P T R 1997

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	26	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	74	3,0

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[1] delete or add other activities as appropriate