STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Microprocessor technology**	Code **1010322221010321118**

Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 2**

Elective path/specialty **Lighting Engineering**	Subject offered in: **polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **full-time**

No. of hours				No. of credits **2**
Lecture: **1**	Classes: **-**	Laboratory: **1**	Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art	ECTS distribution (number and %**)**
technical sciences	**2 100%**
Technical sciences	**2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematics, physics, basic electrical engineering and electronics, including digital.
2	**Skills**	The ability to understand and interpret knowledge conveyed in the classroom. Ability to effectively self-education in a field related to the chosen field of study.
3	**Social competencies**	Is aware of the need to broaden their competence, willingness to work together as a team.Is aware of the need to broaden their competence, willingness to work together as a team.

Assumptions and objectives of the course:

N-depth knowledge of the theoretical and practical problems associated with the construction elements, components and microprocessor systems and the basis of their programming and design.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. describe the construction and operation of basic logic elements and components of the processor - [K_W07+++, K_W10++]

2. explain the effects processor and microprocessor systems - [K_W07+++, K_W18++, K_W08++]

Skills:

1. apply knowledge of the theory of digital circuits necessary to identify the relevant data parameters and commands - [K_U01++, K_U05+/

2. obtain information from the literature and the Internet, work individually, independently solve problems in the theory of analysis and design systems and microprocessor devices - [K_U01++, K_U02++, K_U07+]

Social competencies:

1. able to think and act in an entrepreneurial manner in the analysis of the microprocessor - [K_K01+, K_K02++]

Assessment methods of study outcomes

Lecture:

? assess the knowledge and skills listed on the written exam with microprocessor technology.

Laboratory:

? test and favoring knowledge necessary for the accomplishment of the problems in the area of laboratory tasks,

? continuous evaluation for each course - rewarding gain skills they met the principles and methods,

? assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment report performed exercise.

Get extra points for the activity in the classroom, and in particular for:

? propose to discuss additional aspects of the subject,

? the effectiveness of the application of the knowledge gained during solving the given problem,

? ability to work within a team practice performing the task detailed in the laboratory,

? subsequent to the improvement of teaching materials,

? developed aesthetic diligence reports and jobs - in the self-study.

Course description

Lecture: Number systems, codes, digital logic circuits. Construction of processors. Microprocessors, microcontrollers. PLCs, integrated I / O - RS-xxxx, I2CBus and other communication systems - CAN protocols, and other surveillance systems (polling) and security, to run. DSPs, ASICs. Introduction to the concept of microprocessor control systems and measurement. Microprocessor-based industrial networks in distributed systems. PROFBUS and CAN. Modeling and design of microprocessor control systems. Sample microprocessor systems - control systems in vehicles, road trips, the gas industry, building intelligent systems for property protection.

Laboratory: Introduction to exemplary architecture of the microcontroller and microcontroller programming in C in terms of handling internal and external devices. C51 Fundamentals of language specification, implementation of maintenance programs selected internal components such as timer and system interrupts, serial, AC converter. Implementation support external devices such as LCD, LED, keyboard matrix. The implementation of an exemplary cooperation project microprocessor system with an external device.

Basic bibliography:

1. Rydzewski A.: "Mikrokomputery jednoukładowe rodziny MCS-51", WNT, Warszawa 1997.

2. Jabłoński T., Pławsiuk K.: "Programowanie mikrokontrolerów PIC w języku C", BTC, Warszawa 2002.

3. Krzyżanowski R.: "Układy mikroprocesorowe", Mikom, Warszawa 2004.

Additional bibliography:

1. Bogusz J.: "Programowanie mikrokontrolerów 8051 w języku C w praktyce", BTC, Warszawa 2000.

2. Prace dyplomowe IEiEP.

3. Internet.

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	15
2. participation in laboratory classes	15
3. participation in consulting (lecture)	4
4. participation in consulting (laboratory)	3
5. preparation to test/exam	14
6. test/exam	2
7. preparation for the classes and preparation of the report	10

Student's workload

Source of workload	hours	ECTS
Total workload	63	2
Contact hours	39	1
Practical activities	28	1