



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Designing of electronic circuits [S2EiT1-MiEPU>PUE]

### Course

Field of study

Electronics and Telecommunications

Year/Semester

1/2

Area of study (specialization)

Multimedia and Consumer Electronics

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

### Number of hours

Lecture

30

Laboratory classes

30

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

4,00

### Coordinators

dr inż. Krzysztof Klimaszewski

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### Lecturers

### Prerequisites

Extended knowledge in mathematics useful in formulating and solving problems in electronics and telecommunications arena. Knowledge in the structure and architecture of programmable digital circuits and their practical use. The developed knowledge, backed by mathematic background, about the basic circuit theory necessary for understanding, analysis and evaluation of operation of electric circuits. The ability to freely communicate in English, especially about professional subjects, ability to use the trade literature in English. (books, technical and scientific journals, application notes, catalogs, manuals and standards and such) The understanding of one's knowledge and abilities limitations, the necessity of constant training. The awareness of the necessity of a professional approach to the technical problems to be solved and taking responsibility for the proposed technical solutions.

### Course objective

The demonstration of theoretical and practical aspects of electronic circuit design. Practical realisation of the design process of a chosen electronic circuit.

### Course-related learning outcomes

Knowledge:

The structured knowledge of the properties and characteristics of electronic components, in the structure, analysis and circuit design aspects, including embedded systems, as well as designing of printed boards.

#### Skills:

The ability to find the necessary information about modern integrated circuits and their applications in the designed circuits.

The ability to design and construct an analog or analog-digital electronic circuit.

The ability to design an electronic circuit using a microcontroller chosen specifically for the requirements of the project.

#### Social competences:

The knowledge of the limitations of one's knowledge and abilities, the necessity of further training.

The understanding of the importance of the safety of use of the electronic devices.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Oral exam with approximately 3 questions concerning the subjects presented during the lectures.

The laboratory exercises are graded based on the result of the project - the designing and realization of the electronic circuit.

### Programme content

During the course the basic issues related to the design of electronic systems are demonstrated and used in practice.

### Course topics

#### Lecture:

Batteries, cells, AC line power supplies

Technologies of realization of electronic circuits

The basic rules for design of circuit boards

Measurements in electronic circuits

#### Laboratories:

Designing of circuit boards

Preparation of the manufacturing data

The assembly and debugging of the designed circuit

Measurements of the developed circuit

### Teaching methods

Lectures: multimedia presentation, illustrated by the examples shown on overhead projector, conversatory lecture

Laboratory exercises: brainstorming, group work

### Bibliography

#### Basic

„Sztuka elektroniki” P. Horowitz, W. Hill

#### Additional

"Projektowanie Układów Analogowych" R.A.Pease

"Analogowe Układy Elektroniczne" J.Boksa

"The Art of Electronics: The x-Chapters" P. Horowitz, W. Hill

### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	75	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00