COURSE DESCRIPTION CARD - SYLLABUS

Course name
Electronic Circuits [S1MiKC1E>UE]

Course

Field of study
Microelectronics and Digital Communication

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
24

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

dr inż. Krzysztof Klimaszewski
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Lecturers

Prerequisites

Knowledge of DC and AC circuit analysis methods, knowledge of basic electronic components and their operating principles. Practical ability to use electronic circuit diagrams. Ability to obtain information from literature in Polish and English.

Course objective

Familiarize students with basic electronic systems, limitations of their capabilities, and ways of using systems in specific applications. Provide basic knowledge about designing electronic systems.

Course-related learning outcomes

Knowledge:
Knows the basic methods and tools for designing and analyzing electronic systems
Knows the operating principles of basic systems used in modern electronics
Has knowledge of the capabilities of measurement tools used in electronics.

Skills:
Is able to obtain and analyze information from literature, databases and other sources in Polish and

English. Is able to integrate and interpret the obtained information, draw conclusions and justify opinions.
Is able to analyze requirements and specify design of electronic systems. Is able to select appropriate electronic components based on catalogs and application notes and design and implement electronic systems.
Is able to independently plan and implement the process of self-education.
Is able to apply occupational health and safety precautions.

Social competences:
Knows the limitations of his/her own knowledge and skills, understands the need for further education.
Is aware of the need for a professional approach to solving technical problems and taking responsibility for the technical solutions he/she proposes.
Has a sense of responsibility for the designed electronic systems.
Is able to work effectively in project teams

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam consisting of calculation tasks and test questions concerning issues presented in class.
Passing threshold: 50% of points.
50-60% ocena dst, 61-70% ocena dst+, 71-80% ocena db, 81-91% ocena db+, 92+% ocena bdb
If necessary, the written exam may be supplemented by an oral exam. The final assessment may include activity during classes - including solving additional tasks.
Passing laboratory exercises based on assessment of reports prepared during each class, assessment of the final project.

Programme content

The program includes familiarizing students with a variety of basic analog and digital electronics systems from a theoretical and practical perspective.

Course topics

Lecture:
Generator circuits
Differential amplifiers
Voltage regulators - linear and pulse, thermal resistance
Structure of logic circuits
Basic issues concerning noise in electronic circuits
Laboratory exercises:
Basics of printed circuit board design
Nonlinear and generative circuits
Power supply circuits
Implementation of an electronic circuit project

Teaching methods

Lecture: multimedia presentation, illustrated with examples provided on a projector, conversational lecture
Laboratory exercises: multimedia presentation, independent construction of systems, independent performance of measurements, performance in groups of tasks described in the exercise instructions, independent and group work on the project (Project Based Learning)

Bibliography

Basic:
„Sztuka elektroniki” P. Horowitz, W. Hill, WKiŁ 2015
„Układy połprzewodnikowe” U. Tietze, C. Schenk, WNT 1996

Additional:
„The Art of Electronics: The x-Chapters” P. Horowitz, W. Hill, Cambridge University Press 2020

„Układy Elektroniczne Analogowe i Cyfrowe” A. Filipkowski, WNT 2006
„Układy Elektroniczne cz.I Układy Analogowe Liniowe” Z. Nosal , J. Baranowski, WNT 1994

Breakdown of average student's workload

	Hours	ECTS
Total workload	84	3,00
Classes requiring direct contact with the teacher	54	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00