COURSE DESCRIPTION CARD - SYLLABUS

Course name
Electronic systems [N1EiT1>UE]

Course

Field of study
Electronics and Telecommunications

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
20

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

6,00

Coordinators

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Lecturers

Prerequisites

A student starting this subject should have knowledge of the basics of algebra, mathematical analysis, probability calculus; structured, mathematically based, detailed knowledge of basics of circuit theory necessary to understand, analyze and evaluate the operation of electrical circuits. He should also have the ability to obtain information from given sources Polish or English and be ready to work in a team.

Course objective

Familiarizing students with basic electronic circuits, the limitations of their capabilities and how to use the circuits in specific applications. Providing basic knowledge about designing electronic circuits.

Course-related learning outcomes

Knowledge
After completing the course, the student has:
- structured and detailed knowledge of the principles of operation of typical circuits which can be met in applications discussed in the lecture.
- structured and detailed knowledge of the basic principles of electronic circuit design
Skills

After completing the course, the student is able to:
- identify the problem and formulate specifications for the design of a simple electronic analog circuit.
- determine the principle of operation of a simple electronic circuit on the basis of its diagram.
- use the documentation of the electronic components in the design of simple circuits.
- design and practically implement a simple electronic circuit.
Social competences
Student after completing the course:
- understands the need and knows the possibilities of continuous training and raising professional, personal, and social competences
- has a sense of responsibility for the designed electronic circuits, can cooperate for obtaining more complex goals, and understands the need to bear the consequences of their decisions and behavior.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

1. the knowledge acquired during lectures is verified during the final written and/or oral exam depending on the number of students taking the exam. In the case of an oral examination students receive a set of 20 problem questions before the end of the last lecture. During oral exam, the student receives 3 questions. Each answer to the question asked is graded scale from 2 to 5. The final grade for the oral exam is the arithmetic mean of the grades for each answers. The passing threshold is 2.75 (grade 3.0), then 3.20 (grade 3.5), 3.65 (grade 4.0), 4.10 (rating 4.5), 4.55 (rating 5.0). In the case of the written exam, the passing threshold is 50% of points (3.0 rating), then 60% (3.5 rating), 70% (4.0 rating), 80% (4.5 rating), 90% (5.0 rating), list final exam topics are sent by e-mail to students).
2. knowledge and skills acquired during laboratory exercises are verified on the basis of reports on laboratory exercises performed in accordance to the instructions prepared for each exercises, the final grade includes the formal compliance of the report with the instructions and the method of preparing the measurements results and answers to questions included in the manual.

Programme content

Lectures:
- Operational amplifiers in non-linear systems,
- Sinusoidal generators and function generators,
- Phase-locked loop,
- Continuous voltage stabilizers,
- Pulse voltage stabilizers,
- Power amplifiers,
- Thermal resistance,
- Active filters,
- Noise in electronic systems.

Laboratory exercises:
- Comparator, Schmitt flip-flop,
- Nonlinear and generating systems with operational amplifier,
- Function generator,
- Wien bridge generator,
- Analog thermometer,
- Phase-locked loop,
- Microphone amplifier,
- Active filters,
- Linear stabilizer,
- Pulse converters.

Course topics

none

Teaching methods

1. Traditional lecture.
2. Laboratory exercises: performing practical tasks in groups (2-4 people) based on written instructions.

Bibliography

Basic
1. U. Tietze, Ch. Schenk, Układy Półprzewodnikowe, WNT 2009,
3. Nosal Z.,Baranowski J., Układy Elektroniczne cz.I Układy Analogowe Liniowe,WNT 1998
Additional
1. Filipkowski A., Układy Elektroniczne Analogowe i Cyfrowe, WNT 2006,
2. Adel S. Sedra, Kenneth C. Smith, Microelectronic Circuits, Oxford University Press,
3. Richard C. Jaeger, Microelectronic Circuit Design, McGraw-Hill 1997,
4. Kuta S. , Elementy i Układy Elektroniczne cz. I, Wydawnictwo AGH, 2000,
5. P. Horowitz, W. Hill, Sztuka Elektroniki, WKiŁ 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	130	6,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	4,00