COURSE DESCRIPTION CARD - SYLLABUS

Course name
Consumer electronics systems

Course

Field of study
Automation and Robotics

Year/Semester
3/5

Area of study (specialization)
-

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
8

Laboratory classes
18

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
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Faculty of Automatic Control, Robotics and
Electrical Engineering

ul.Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: The student starting this subject should have knowledge and ability to solve basic problems in mathematics and electrical engineering.

Skills: The student should be able to obtain information from the indicated sources, as well as understand the need to expand his competences and be ready to cooperate in a team.

Social Competences: The student should show such features as: honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

1. To provide students with basic knowledge on the construction and operation of electronic devices typically used in practice.

2.Developing students' skills in solving technical problems such as: qualitative and quantitative description of phenomena related to electrical engineering and electronics - carrying out measurements of specific electrical quantities and determining the relationship between them, verification of the obtained results on the basis of theoretical knowledge.

3. Shaping teamwork skills in students - the ability to cooperate in the organization of acoustic measurements and in the preparation of final research reports.

Course-related learning outcomes

Knowledge

1. The student understands the methodology of designing specialized analog and digital electronic systems - [K1_W4]

2.The student has extensive knowledge of modeling and identification of linear and nonlinear systems - [K1_W5]

3.The student has detailed knowledge of the construction and use of advanced sensory systems - [K1_W6]

Skills

1. The student is able to simulate and analyze the operation of complex automation systems as well as plan and carry out experimental verification - [K1_U9]

2. The student is able to build a simple electronic circuit

3. The student is able to measure the characteristics of a given electronic system

Social competences

The student is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for decisions made - [K1_K2]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:

1) in the field of lectures:

based on answers to questions about the material discussed in previous lectures,

2) in the field of laboratory classes:

on the basis of the assessment of the current progress in the implementation of tasks.

Summative assessment:

1) in the field of lectures, verification of the assumed learning outcomes is carried out by:

a.assessment of the knowledge and skills shown in the problem-based written test - the test covers 4 tasks, the maximum number of points is 10, and the number of points required for a satisfactory grade is 6,

b. discussion of the test results,

2) in the field of laboratory classes, verification of the assumed learning outcomes is carried out by:

a. assessment of the student's preparation for individual laboratory classes ("entrance" test) and assessment of skills related to the implementation of laboratory exercises,

b. continuous assessment, during each class (oral answers) - rewarding the increase in the ability to use the learned principles and methods,

c. assessment of team work skills,

d. evaluation and "defense" by the student of the reports on the implementation of the laboratory exercise.

Obtaining additional points for activity during classes, in particular for:

1. Discuss additional aspects of the issue,

2. Effectiveness of applying the acquired knowledge while solving a given problem,

3. The ability to cooperate as part of a team practically carrying out a detailed task in the laboratory,

4. Remarks related to the improvement of teaching materials,

5. Identifying students' perceptual difficulties, enabling the ongoing improvement of the teaching process.

Programme content

The lecture program includes the following topics:

1.Applications of analog electronic circuits

2.Applications of digital electronic circuits

3.Analog and digital generation circuits

4.Supporting the design of electrical systems

Laboratory classes are conducted in the form of 14 2-hour lab exercises, preceded by a 2-hour instructional session at the beginning of the semester. Exercises are carried out by 2-person teams.

The program of laboratory classes includes the following topics:

1. Instructional session

2. Active linear systems

3. Active rectifier systems

4. Instrumental amplifiers

5. Active filters

6. RC generators

7. NE555 timers

8. AC and CA converters

9. Final test

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the board, solving problems

2. Laboratory classes: practical exercises, conducting experiments, team work

Bibliography

Basic

1. P. Horowitz, W. Hill: Sztuka Elektroniki, tom 1 i 2, WKiŁ, W-wa, 1995

2. J. Kalisz: Podstawy elektroniki cyfrowej, WKiŁ, W-wa, 2008

3. C Kitchin - L.Counts. Wzmacniacze operacyjne i pomiarowe. Przewodnik projektanta, BTC, 2009

Additional

Brian Santo, 25 Microchips That Shook the World, IEEE Spectrum, May 2009,

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
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]	49	2,0

[1] delete or add other activities as appropriate