



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Electronical and electrical circuits designing [S1AiR1E>PUEiE]

Course

Field of study

Automatic Control and Robotics

Year/Semester

3/5

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

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student starting the subject should have a basic knowledge of electronics and electrical engineering. One should also be able to obtain information from specified sources and be willing to cooperate as part of a team.

Course objective

Familiarize students with the principles of electronic and electrical circuit design. Acquire the skills to use programs to support the process of designing and analysis of electronic and electrical circuits. Knowledge in reading and writing technical documentation.

Course-related learning outcomes

Knowledge:

Knows and understands typical engineering technologies, principles and techniques of construction of simple automation and robotics systems; knows and understands the principles of selection of executive

systems, computational units and measurement and control elements and devices [K1_W20 (P6S_WG)]. Is familiar with the current status and latest development trends of the field of automation and robotics [K1_W21 (P6S_WG)].

Knows and understands the basic processes in the life cycle of devices and selected safety systems used in automation and robotics [K1_W22 (P6S_WG)].

Skills:

Can prepare documentation concerning the realisation of an engineering task in Polish and foreign language [K1_U4 (P6S_UW)].

Is able to build, commission and test a simple electronic and electromechanical system [K1_U15 (P6S_UW)].

Is able to select the type and parameters of the measurement system, control unit and peripheral and communication modules for the selected application and integrate them in the form of the resulting measurement and control system [K1_U22 (P6S_UW)].

Is able to evaluate the suitability of routine methods and tools for designing automation and robotics systems, and select and apply the appropriate method and tools [K1_U24 (P6S_UW)].

Social competences:

Is aware of the importance and understands the non-technical aspects and consequences of engineering activities, including their impact on the environment and the related responsibility for decisions; is ready to care for the achievements and traditions of the profession [K1_K2 (P6S_KR)].

The graduate is aware of the need for a professional approach to technical issues, meticulous familiarization with the documentation and environmental conditions in which the equipment and its components can operate. The graduate is ready to observe the rules of professional ethics and to demand it from others, to respect the diversity of opinions and cultures [K1_K5 (P6S_KR)].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Lecture: written exam (checking theoretical knowledge) on electronic and electrical circuits designing.

Design: Design review and assessment.

Programme content

Lecture. Symbols and general rules determining the correct documentation technical system / device. Ways of conducting electrical circuits together with necessary calculations of their properties. Ways of making printed circuits and control cabinets. Get acquainted with the available programs for creating and analysis of electronic and electrical circuits. Get acquainted with the process creating electronic and electrical circuits.

Design: Self-made designing of electronic and electrical circuits.

Teaching methods

Lecture: multimedia presentation, illustrated with real-world examples of electronic and electrical circuits designing.

Design: designing of electronic and electrical circuits..

Bibliography

Basic

1. Cezary Zieliński, Podstawy projektowania układów cyfrowych, PWN 2012
2. Robert A. Pease, Projektowanie układów analogowych. Poradnik praktyczny, BTC 2005.
3. Harry Kybett, Earl Boysen, Elektronika dla każdego. Przewodnik, Helion.

Additional

1. David Cook, Budowa robotów dla początkujących. Wydanie II.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00