POLITECHNIKA POZNAŃSKA

EUROPEJSKI SYSTEM TRANSFERU I AKUMULACJI PUNKTÓW (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD- SYLLABUS

Course name
Simulation methods of testing the electronic circuits

Course

Field of study
Mathematics in Technology

Area of study (specialization)
—

Level of study
first-cycle studies

Form of study
full-time

Year/Semester
4/7

Profile of study
general academic

Course offered in
Polish

Requirements
elective

Number of hours

Lectures
15

Tutorials
—

Laboratory classes
15

Projects/seminars
15

Other (e.g. online)
—

Number of credit points
4

Lecturers

Responsible for the course/lecturer::

mgr inż. Piotr Kuwałek

Responsible for the course/lecturer::

—

Prerequisites

Basic knowledge in the scope of electrotechnics, electronics, metrology and semiconductors. Ability of the efficient self-education, clarify and understand the area concerned with the module. Awareness of the necessity of competence broadening and ability to show readiness to work as a team.

Course objective

Skills in the scope of analysis of the electronic analog and digital circuits with application of computer assistance to simulate these circuits. Specialistic knowledge from analog and digital electronic circuits.

Course-related learning outcomes

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Knowledge

- knowledge about select electronics circuits analyses method;

- knowledge about the principles and techniques of measurement signals acquisition and processing for the modern applications in industry and biomedical engineering;

- knowledge about the application areas and potential of the modern measurement systems.

Skills

- ability to design creatively the modern measurement systems, using the possibilities offered by presenty available technologies, taking into account the limitattions of the knowledge and technique status.

Social competences

- the ability to precisely identify the problem, the explanation of which requires literature studies or consultation with technical specialists.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Projects/seminars:

- continuous evaluation, at all classes,and awarding the skill increase in the use of the known principles and methods;
- evaluation of the knowledge and skills related to a given group or independent project and evaluation of the prepared reports.

Programme content

Update: 10.09.2020r.

Projects/seminars: Methods of education are orientated to students to motivate them to participate actively in education process by discussion and reports.Groups of students work as teams. Discussion on different methods and aspects of problem solutions. Detailed reviewing of particular projects documentation with:

- design and analysis of properties of the selected electronic systems and carrying out the simulation studies using specialized programming environments;

- making the circuit diagrams by the use of Tina-TI or LTspice environment;

- application of the MultiSIM environment for the DC, AC, frequency and time analysis of electronic circuits.

Teaching methods

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Projects/seminars: presentation illustrated with examples given on a whiteboard or computer monitors, and performing tasks given by the lecturer – practical exercises.

Bibliography

Basic

- M. Ghausi, Electronic Circuits: Devices, Models, Functions, Analysis, and Design, D.Van Nostrand Comp., New York 1971.

- U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2009.

- K. Baranowski, A. Welo, Symulacja układów elektronicznych PSPice, EDU-MIKOM, Warszawa 1996.

Additional

- Tina-TI video training series https://training.ti.com/tina-ti-video-training-series

- K. M. Noga, M. Radwański, Multisim. Technika cyfrowa w przykładach, BTC, Legionowo 2009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	4,0
Classes requiring direct contact with the teacher	60	2,0
Student's own work (literature studies, preparation for project classes, project preparation)	60	2,0