POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)
pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design and simulation of electronic systems

Course

Field of study	Year/Semester
Electrical Engineering	2 / 3
Area of study (specialization)	Profile of study
Measurement Systems in Industry and Biomedical Engineering	general academic
Level of study	Course offered in
Second-cycle studies	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
0	0	0
Tutorials	Projects/seminars	
0	30	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

M.Sc. Eng. Piotr Kuwałek
email: piotr.kuwalek@put.poznan.pl
Faculty of Control, Robotics and Electrical
Engineering
Piotrowo 3A 60-965 Poznan

Responsible for the course/lecturer:

Prerequisites

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

Course objective

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

Course-related learning outcomes

Knowledge

1. Knowledge about select electronics circuits analyses method.

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2. Knowledge about the principles and techniques of measurement signals acquisition and processing for the modern applications in industry and biomedical engineering.

3. Knowledge about the application areas and potential of the modern measurement systems.

Skills

1. Ability to know and select electronics circuits analyses method.

2. 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.

3. Ability to think and act enterprisingly in the area of the modern measurement systems.

Social competences

1. Understanding a need of the act enterprisingly in the area of the modern measurement systems.

2. Understanding a need of the broad populatrization of the knowledge in the area of simple and complex measurement systems used in industry and biomedical engineering.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Projects:

- 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

Methods of education are orientated to students to motivate them to participate actively in education process by discussion and reports.

Projects:

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

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

Bibliography

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Basic

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

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

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

Additional

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

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

Breakdown of average student's workload

	Hours	ECTS
Total workload	76	3,0
Classes requiring direct contact with the teacher	38	2,0
Student's own work (literature studies, preparation for project classes, project preparation) [1]	68	3,0

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[1] delete or add other activities as appropriate