GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electronics, PG_00040183		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	English
Semester of study	4	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Microelectronic Systems -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Kurgan	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	6.0	14.0	50

Subject objectives

The objective of the course is to introduce a student to the basics of electronics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W10	Student possesses an elementary knowledge on electronics, including basic laws of circuit and signal theory, knows laws of electromagnetism, and knows operation mechanisms and properties of basic semiconductor devices.	[SW1] Assessment of factual knowledge
K6_U05	Student is able to conduct basic measurements of electrical quantities. Is able to perform computer-aided simulations of analog electronic circuits. Is capable of experimental verification of the operation of analog electronic circuits.	[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	1. The phenomenon of the current in electrical circuits. Conductors, isolators, semiconductors and superconductors. Electric current and voltage (potential difference). Ohm's law and Kirchhoff's laws. 2. Resistors, voltage and current sources. Powers associated with resistors and sources. Thevenin and Norton equivalent circuits. 3. Current, voltage and power waveforms in time and frequency domains. Spectrum of time waveforms. 4. LC filters. 5. Magnetism. 6. DC and AC applications. 7. Basics of semiconductor devices.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory - reports from the laboratory tasks	50.0%	50.0%
Lecture - test in the end of the semester	50.0%	25.0%
Lecture - test in the middle of the semester	50.0%	25.0%

Recommended reading

Basic literature	[1] J.D. Irwin, R. M. Nelms, Basic Engineering Circuit Analysis, John Wiley & Sons Inc., 2011 [2] E. Gates, L. Chartrand, Introduction to Electronics, Delmar Cenagage Learning, 2007
Supplementary literature	[1] A. Agawal, J.H. Lang, Foundations of Analog and Digital Electronic Circuits, Elsevier, 2005 [2]U. Tietze, C. Schenk, E. Gamm, Electronic Circuits Handbook for Design and Applications, Springer, 2008 [3]A.S. Sedra, K.C. Smith, Microelectronic Circuits, Oxford University Press, 2007
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. Calculate Thevenin and Norton equivalent circuits for a given example. 2. Draw and describe frequency characteristic of an LC filter of a given type. 3. Describe the construction and operation principle of an AC generator. 4. Name and describe Maxwell's equations.
Work placement	Not applicable

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