GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electronic Devices - laboratory, PG_00048812		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Microelectronic Systems -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Łukasz Gołuński	
	Teachers	dr inż. Łukasz Gołuński	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	0.0	0.0	15

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	15	1.0	9.0	25

Subject objectives

Learning through experiments of the operation principles of basic semiconductor devices and learning the methods of measuring their chatacteristics, as well as learning methods of determining values of their equivalent circuits, useful in designing of electronic circuits.

Learning outcomes

Course outcome	Subject outcome	Method of verification

Subject contents

Course content – laboratory
Static characteristics of semiconductor diodes. Switching characteristics of semiconductor diodes. Properties of stabilization diodes. IV characteristics of field effect transistors and extraction of parameters for their equivalent circuits. Small signal operation of transistors for small and medium frequencies. Pulse operation and models of transistors. Characteristics and models of electroluminescent diodes and photodiodes.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory experiments	50.0%	100.0%

Recommended reading

Basic literature	Our laboratory instruction booklets. Ch. Papadopoulos, "Solid-State Electronic Devices: An Introduction", Springer 2014 J.-P. Colinge, C.A. Colinge, "Physics of Semiconductor Devices", Springer 2002
Supplementary literature	A.S. Sedra, K.C. Smith, "Microelectronic Circuits", Oxford, 2007 Ch.C. Hu, Modern Semiconductor Devices for Integrated Circuits, Prentice Hall 2009
eResources addresses	

Example issues/ example questions/ tasks being completed	Connect a circuit presented on a diagram in the instruction booklet. The output voltage value of the generator should be adjusted so that the peak-peak value of Vce is 100 mV at f = 1 kHz. Take a record of the generator voltage Vgpp. Use it to calculate the low-frequency value of h21e0. Measure and plot the dependence of |h21e| on frequency. Determine experimentally the fbeta value. Calculate values of the emitter-base diffusion capacitance CdifE, the common-emitter current-gain cut-off frequency fT, and the electron transit time ttn.
Practical activites within the subject	Not applicable

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