Syllabus of the educational discipline
«COMPUTER ELECTRONICS AND CIRCUITRY»

Cycle of Higher Education	*First cycle of higher education (Bachelor's degree)*
Field of Study	*12 Information Technologies*
Specialty	*123 Computer engineering*
Educational program	*Computer systems and networks*
Discipline status	*Normative*
Teaching language	*English*
Year of studies, semester	*3 year (5 semester)*
Number of credits ECTS	*4.5 credits*
Distribution by types of trainings and hours of study	*Lectures, Laboratory studies, Independent training*
Form of final assessment	*Exam*
Teacher	*Chichura I.I., senior lecturer of department of computer systems and networks*
Teacher's contacts	*ihor.chichura@uzhnu.edu.ua*
Course Schedule	*According to the timetable*

The purpose of the discipline "Computer Electronics" is to study the basic physical phenomena and processes occurring in the basic analog components of computer electronics, the laws to which they are subject, and the principles of their operation and analysis.

As a result of studying the discipline the student must:

know:

- *properties and parameters of electronics components for the design, adaptation and modification of modern telecommunications equipment*
- *classification, symbols, design, physical and technical parameters and functions of basic components of computer systems*
- *the laws and rules for the use of various circuit elements in computer systems*
- *simplest methods of calculation and analysis of computer electronics systems, which can be used in the design, implementation, and operation of various computer engineering hardware*

be able to:

- apply knowledge of physics and electronics to solve problems in the design and use of information systems and technologies

- analyze and modeling electronic chains and electronic circuits of computer systems.

Prerequisites for learning

Discrete Mathematics, Physics, Theory of Electrical and Magnetic Circuits.

Content of the educational discipline

Topic 1. The subject and general content of the course
Topic 2. Interconnection and mutual transformations of information, messages and signals
Topic 3. Electronic circles, electronic circuits and schematic elements of computer electronics
Topic 4. Resistors, capacitors and inductors as basic passive elements of electronic circuits
Topic 5. p-n junction as the main structural element of modern active electronics components
Topic 6. Semiconductor diodes, their types and basic properties and functions in computer electronics.
Topic 7. Bipolar transistors and their main properties.
Topic 8. Unipolar transistors and properties. Basic types and functions of unipolar transistors

Course page on the Moodle platform (personal training system)	*Syllabus of the educational discipline, hyperlinks to electronic publications of the discipline, recommended literature, students' attendance, lecture materials, presentations, questions for self-control, methodical materials for laboratory works, tests, tasks for*

	checking students' knowledge. https://moodle.uzhnu.edu.ua

Recommended literature

1. *Albert P. Malvino Digital Computer Electronics. - Career Education; 3rd edition, 1992. - 544p.*
2. *Noam Nisan The Elements of Computing Systems, second edition: Building a Modern Computer from First Principles. - The MIT Press; 2nd edition, 2021. - 344p.*
3. *Paul Scherz Practical Electronics for Inventors. - McGraw Hill TAB; 4th edition, 2016. - 1056p.*

Assessment system of learning outcomes

The ECTS grade that a student receives after studying a credit module of a discipline is determined according to the student's rating. A student's credit module rating consists of the points the student receives during the semester for the following types of work:

1. Modular control work (MCW) duration of 1 acad. hours each. The maximum number of points for the MCW is 40 points.

2. Performance of laboratory works.

During the semester, students perform 3 laboratory works

Scores on individual and independent work of students are awarded for: preparation of essays, modernization of tasks, creative approach to task performance, performance of tasks to improve didactic materials on the discipline: 0-15 points for each module.

Each module is assessed a maximum of 100 points. At the end of the discipline a rating score is derived as the arithmetic average of the points from the two modules.

ECTS and national grading scale

Mark scale	ECTS	Exam	Test
90 - 100	A	Excellent	Satisfied
82 - 89	B	Good	
74 - 81	C		
64 - 73	D	Satisfactory	
60 - 63	E		
35 - 59	FX	"Unsatisfactory" with possibility to pass the exam again	"Not satisfied" with possibility to pass the exam again
1 - 34	F	"Unsatisfactory" with obligatory repeated study of the discipline	"Not satisfied" with obligatory repeated study of the discipline