

# POWER ELECTRONICS

## COURSE SYLLABUS ABSTRACT

1-53 01 05 Automated electric drives

	STUDY MODE		
	full-time	part-time	part-time (shortened program)
Year	2	3	2
Semester	4	5	3
Lectures, hours	4	5	3
Practical classes (seminars), hours	34	8	8
Laboratory classes, hours	16	–	–
Exam, semester	4	5	3
Contact hours	84	20	20
Independent study, hours	76	140	140
Total course duration in hours / credit units	160/4		

### 1. Course outline

The course "Power electronics" studies the characteristics, classification and principle of operation of power electronic devices; basic electromagnetic processes in semiconductor energy converters; the main areas of application of power electronics devices.

### 2. Course learning outcomes

Upon completion of the course, students will be expected to know:

- the principle of operation and features of the use of power semiconductor devices;
- the classification, purpose, basic circuit solutions for power electronics devices;
- the basic process equations, equivalent circuits and characteristics;
- the principle of operation and control algorithms in electronic converters of electrical energy;

be able to:

- solve practical problems of designing, testing and operating power electronics devices, the simplest tasks of modeling power electronic devices;
- perform elementary calculations in the design and testing of power electronic converters.

possess:

- the main control algorithms used in power electronic devices;
- the calculation methods for determining the parameters and characteristics of power electronics devices;
- the methods for conducting elementary tests of electronic energy converters.

### 3. Competencies

BPC-7. To own the engineering methods for calculating semiconductor electrical energy converters and be able to apply them.

### 4. Requirements and forms of midcourse evaluation and summative assessment

To assess the quality of assimilation of educational material by students, including acquired competencies, current certification is carried out in the form of an exam in the academic discipline. The results of the current certification are evaluated by marks in points on a ten-point scale.

Intermediate control of progress is aimed at ensuring maximum efficiency of the educational process, increasing motivation for learning; provides for the assessment of the performance and defense of laboratory work and individual assignments.