

# POWER ELECTRONICS IN ELECTROMECHANICAL SYSTEMS

## COURSE SYLLABUS ABSTRACT

7-06-0716-03 Instrument engineering  
(speciality code and name)

Monitoring and control in electromechanical systems  
(concentration)

Advanced higher education

	STUDY MODE	
	full-time	part-time
Year	1	1
Semester	1	1
Lectures, hours	16	4
Practical classes (seminars), hours	16	4
Laboratory classes, hours	16	4
Pass/fail, semester	1	1
Contact hours	48	12
Independent study, hours	168	204
Total course duration in hours / credit units	216/6	

### 1. Course outline

The purpose of the academic discipline is to develop students' knowledge about the characteristics, classification and operating principle of power electronic devices; basic electromagnetic processes in semiconductor energy converters and main applications 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;
  - classification, purpose, basic circuit design solutions of power electronics devices, features of their design;
  - basic process equations, equivalent circuits and characteristics;
  - operating principle and control algorithms in electronic electrical energy converters;
- be able to:

- solve practical problems in the design, testing and operation of power electronics devices;
  - solve the simplest problems of modeling power electronic devices;
  - perform basic calculations when designing and testing power electronic converters;
- have the skills:
- application of basic control algorithms in power electronic devices;
  - carrying out calculations to determine the parameters and characteristics of power electronics devices;
  - carrying out basic tests of electronic energy converters.

### 3. Competencies

Possess engineering methods for calculating semiconductor electrical energy converters and be able to apply them

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

Current monitoring of progress involves assessing the completion of tests. Interim certification is carried out in the form of a test.