



## RTU Course "Unconventional Systems of Energy Conversion and Accumulation"

11103 Industriālās elektronikas un elektrotehnol.katedra

### **General data**

Code	EEP345
Course title	Unconventional Systems of Energy Conversion and Accumulation
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Power and Electrical Engineering
Responsible instructor	Nadežda Kuņicina
Academic staff	Oskars Krievs Viesturs Bražis
Volume of the course: parts and credits points	1 part, 3.0 Credit Points, 4.5 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	Wind power stations, turbines, adjusting, connections to the Main, small power hydraulic plants, its adjusting, electric machines of the special construction, photovoltaics, piezo generators, piezo motors, motion and movement sensors, low voltage inverters, adjusting, regulation, batteries, UPS.
Goals and objectives of the course in terms of competences and skills	The goal of the course is to introduce students with unconventional systems of energy conversion and accumulation application possibilities. The main tasks is to introduce students with wind generators, turbines, low voltage hydrogenerators, photovoltaics, piezomotors as well with accumulators and power supply without interruptions
Structure and tasks of independent studies	Students has to describe functioning principles of unconventional systems of energy conversion and accumulation
Recommended literature	L.Ribickis, A.Galkina. Enerģijas taupīšanas metodes. Rīga, Latvijas Tehniskais Centrs, 1998, 109 lpp.
Course prerequisites	Electrical machines

### **Course outline**

Theme	Hours
Introduction, examples of application	3
Wind generators - introduction, examples of application	3
Construction of wind generators for shoal waters	3
Construction of offshore wind generators	3
Turbines	3
Regulation, connection to network	3
Low power hidrogenators, regulation	3
Special construction electrical machines	3
Photovoltaics	3
Construction of complex platforms	3
Piezomotors	3
Motion sensors	3
Low voltage inverters	3
Regulation of inverters	3
Accumulators	3
Power supply without interruptions	3

### **Learning outcomes and assessment**

Learning outcomes	Assessment methods
Students know types of unconventional systems of energy conversion.	Students had acquired a themes, the examination answers are positive.
Students can sufficiently use unconventional systems of energy conversion during creation of new electrical schemes.	Students had acquired a themes, the examination answers are positive.
Students can sufficiently describe popular schemes of unconventional systems of energy conversion.	Students had acquired a themes, the examination answers are positive.
Students can sufficiently describe working principles of accumulation.	Students had acquired a themes, the examination answers are positive.

### **Study subject structure**

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	3.0	0.0	0.0		*	