



Faculty of Environmental, Geomatic and Energy Engineering

Field of study: **Renewable Energy Sources**

First-cycle, full-time programme

Passed by: **the Council of the Faculty of Environmental, Geomatic and Energy Engineering**

Semester 1

Module Code	Module Title	Σ	l	c	lab	p	ECTS credits	pract. c. ECTS credits
	<i>Mathematics 1</i>	60	2E	2	-	-	4	0
	<i>Physics</i>	45	1E	2	-	-	4	1.04
	<i>Chemistry</i>	45	1E	1	1	-	4	2.28
	<i>Geology</i>	30	1	-	1	-	3	1.0
	<i>Air Protection Technologies</i>	30	1	1	-	-	3	2.2
	Technical Drawing	30	1	1	-	-	3	1.0
	<i>Materials Science</i>	30	1	-	1	-	3	2.24
	Electrical Engineering and Equipment	60	1	1	1	1	4	2.64
	SSH (elective module)	30	2	-	-	-	2	-
	Student Savoir-Vivre 1	5	5h	-	-	-	0	-
	Principles of Standardisation	8	8h	-	-	-	pass/fail	-
	Total	373	11+13	8	4	1	30	12.4

pract. c. ECTS – ECTS credits for practical classes

Semester 2

Module Code	Module Title	Σ	l	c	lab/lc	p	ECTS credits	pract. c. ECTS credits
	<i>Mathematics 2</i>	30	1E	1	-	-	3	0
	<i>Mechanics and Materials Strength</i>	30	1	1	-	-	2	0.56
	<i>Principles of Computer-Aided Design 1</i>	45	-	-	3	-	3	2.88
	<i>Engineering Thermodynamics</i>	30	1E	-	-	1	3	1.76
	<i>Environmental Biology</i>	45	1	-	2	-	2	1.32
	Principles of Machine Design	30	1	-	1	-	2	1.32
	Waste Management	15	1	-	-	-	2	0
	Principles of Energy Engineering / Principles of Renewable Energy Systems	30	1	1	-	-	3	1.0
	Civil Engineering and Building Physics	45	2E	-	-	1	3	1.32
	Fluid Mechanics	30	1	-	1	-	2	1.24
	Foreign Language 1	30	-	-	2	-	2	1.84
	SSH (elective module)	45	3	-	-	-	3	-
	Protection of Intellectual Property 1	4	4h	-	-	-	pass/fail	-
	Total	409	13+4	3	9	2	30	13.24

/ options to select from

(l – lectures, c – classes, p – project work, lab/lc – laboratory classes/language course, E - examination)

Field Modules; *Core Modules*; *Socio-Economic Sciences and Humanities (SSH)*



	Elective Modules: Socio-Economic Sciences and Humanities (SSH) / general academic modules	1	ECTS credits
	Legal Foundations in Renewable Energy Engineering	1	1
	History of Music	1	1
	Ethics	1	1
	History of Technology and Invention	1	1
	History of European Civilisation	1	1
	Science of Musical Instruments	1	1
	History of Philosophy	1	1
	Fundamentals of Economics	1	1

Semester: 3

Module Code	Module Title	Σ	l	c	lab/lc	p	ECTS credits	pract. c. ECTS credits
	Plastics and Composites	30	1	-	1	-	2	1.32
	Geotechnics	45	1	1	1		3	1.56
	Piped Utility Systems	60	2E	1	-	1	4	1.72
	Passive and Autonomous Housing	45	1	-	-	2	3	2.12
	Heat Pumps	30	1	-	-	1	2	1.2
	Principles of Solar Energy Engineering	45	2E	1	-	-	3	0.88
	Technologies of Biomass Acquisition and Management	30	1	-	1	-	2	1.24
	Hydro Engineering with Elements of Hydrology	30	1		1	-	2	1.24
	Field Electives	45	3	-	-	-	6	0
	Foreign Language 2	30	-	-	2	-	2	1.84
	Physical Education*	30	-	-	2	-	1	0
	Total	420	13	3	8	4	30	13.12

* ECTS credits for Physical Educations classes exceed the minimum number of credits required in order to obtain the diploma

	Field electives (sem. 3)	1	ECTS credits
	Measuring Systems in Renewable Energy Sources	1	2
	Biofuels and Alternative Fuels	1	2
	Environmental Protection and Hazards	1	2
	Legal Aspects of the Use of Biofuels	1	2



Semester 4

Module Code	Module Title	Σ	l	c	lab/lc	p	ECTS credits	pract. c. ECTS credits
	Heating	60	2E	1	-	1	5	2.4
	Ventilation and Air-Conditioning	60	2E	1	-	1	5	2.4
	<i>Principles of Computer-Aided Design 2</i>	30	-	-	2	-	3	2.84
	Heat Pump Systems	45	1	-	-	2	3	2.32
	Photothermal and Photovoltaic Modules / Photovoltaic Systems	60	2	-	-	2	5	3.0
	Biomass Combustion, Biomass Boiler Houses/Plants	60	2	-	-	2	4	2.32
	Field Elective	15	1	-	-	-	2	1.08
	Foreign Language 3	30	-	-	2	-	2	1.84
	Physical Education *	30	-	-	2	-	1	0
	Total	390	10	2	6	8	30	18.20

* ECTS credits for Physical Educations classes exceed the minimum number of credits required in order to obtain the diploma / options to select from

	Field electives (sem. 4)	l	ECTS credits
	Principles of Solar Heating Systems Design	1	2
	Non-standard Piped Utility Systems	1	2
	Environmental Resources Administration and Management	1	2

Semester 5

Module Code	Module Title	Σ	l	c	lab/lc	p	ECTS credits	pract. c. ECTS credits
	Biogas Plants	45	1E	-	2	-	3	1.92
	Wind Energy Engineering	45	2E	1	-	-	3	0.48
	Hydroelectric Energy / Small Hydroelectric Power Stations	60	2	-	-	2	4	2.28
	Energy Conversion and Storage Systems	30	1	-	-	1	3	1.76
	Geothermal Energy	30	1	1	-	-	2	0.4
	Automatic Control of Intelligent Buildings	45	1	-	-	2	3	2.16
	Field Electives	60	2	-	-	2	6	3.84
	Field Elective conducted in English	15	1	-	-	-	3	0
	Foreign Language 4	30	-	-	2E	-	2	1.6



	Protection of Intellectual Property 2	15	1				1	0
	Total	375	12	2	4	7	30	14.44

/ options to select from

	Field electives (sem. 5)	l	p	ECTS credits	pract. c. ECTS credits
	Active and Passive Solar Energy Systems in Buildings	1	1	3	1.08
	Ventilation and Air-Conditioning Systems	1	1	3	1.08
	Energy Use of Biogas	1	1	3	1.08

	Electives conducted in English (sem. 5)	l/lab	ECTS credits
	Renewable Energy	1	3
	Engineering Thermodynamics	1	3

Semester 6

Module Code	Module Title	Σ	l	c	lab	p	ECTS credits	pract. c. ECTS credits
	Heating-Ventilation Systems	60	2E	-	-	2	5	3.12
	Design of Renewable-Energy-Powered Systems	45	1E			2	4	2.6
	Entrepreneurship and Innovations	30	1	1	-	-	2	0.36
	Assessment of RES Environmental Impact	30	1	-	-	1	2	1.12
	Energy Use and Efficiency / Operation, Maintenance and Reliability of Renewable Energy Systems	30	1	-	-	1	2	1.16
	Cost Estimation	45	1	2	-	-	3	0.72
	Field Electives	45	3	-	-	-	6	0
	Field Elective conducted in English	15	1	-	-	-	3	0
	Occupational Health and Safety	15	1				1	0
	Student Savoir-Vivre 2	15	1	-	-	-	1	0
	Total	330	13	3	-	6	30	9.08

/ options to select from

	Field electives (sem. 6)	l	ECTS credits
	Cogeneration Systems	1	2
	Fuel Cells	1	2
	Financing of Sustainable Energy Projects	1	2



	Statistical Methods for Electricity Generation Forecasting	1	2
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	Electives conducted in English (sem. 6)	l/lab	ECTS credits
	Utilization of Post-Combustion Waste	1	3
	The Conversion of Biomass to Energy	1	3
	Heat and Mass Transfer in Buildings	1	3

Semester 7

Module Code	Module Title	Σ	l	c	lab	p	ECTS credits	pract. c. ECTS credits
	Energy Performance of Buildings / Energy Audit of Buildings	45	1	-	-	2	4	2.68
	Field Electives	30	2	-	-	-	4	0
	Bachelor's Degree Seminar	15	-	-	-	1	3	3.0
	Bachelor's Degree Thesis	180					15	15.0
	4-week Internship	-	-	-	-	-	4	4.0
	Total	90 +180	3	-	-	3	30	24.68

/ options to select from

	Field electives (sem. 7)	l	ECTS credits
	Turbosets in Renewable Energy Sources	1	2
	Diffuse Sources in a Power System	1	2
	Documentation of Systems at the Bid Preparation, Construction, Commissioning and Handover Stages	1	2