

**CABINET OF MINISTERS OF UKRAINE
NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE**

**CURRICULUM
to train specialists as 2013 year entrants**

Educational qualificative level	“Master”
Know loads	1001 “Agricultural technology and energy production”
Specialty	8.10010103 “Electrification and automation of agriculture”
Specialization	Manufacture
Master’s programmes	“Computer-integrated process control systems in the fields of agriculture”, “Automation of technological processes and computer integrated systems to control informative and technological resources in agriculture”, “Energy Efficient management biotechnical objects”, “Eelectrified technology and electrical equipment in animal husband”, “Electrified technology and electrical equipment in seed and crop growing”
Form of studying	full-time
Term of training	1,5 year
Qualification	research engineer in energetics for agriculture
Institute of	Implement a master’s program
faculty of	energetics and automation
Departments of	energetics and automation Electric drives and power technologies, Automation and robotic systems named after acad. I.I. Martynenko

I. Schedule of learning process
a) to train Masters as 2013 year enterants
Specialty 8.10010103 “Electrification and automation of agriculture”

Course	2013 year																			2014 year																																																		
	September					30	October				28	November				December				30	January					27	February				24	March				31	April			28	May				June				30	July			28	August																
	2	9	16	23	IX	7	14	21	X	4	11	18	25	2	9	16	23	XII	6	13	20	I	3	10	17	II	3	10	17	24	III	7	14	21	IV	5	12	19	26	2	9	16	23	VI	7	14	21	VII	4	11	18	25																		
I	7	14	21	28	X	12	19	26	XI	9	16	23	30	7	14	21	28	I	11	18	25	II	8	15	22	III	8	15	22	29	IV	12	19	26	V	10	17	24	31	7	14	21	28	VII	12	19	26	VIII	9	16	23	30																		
II	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																		
																																																									X	X	X	X										
	2014 year																																																																					
	September					29	October				27	November				December				29	January					27	February				24	March				31	April			28	May				June				30	July			28	August																
	1	8	15	22	IX	6	13	20	X	3	10	17	24	1	8	15	22	XII	6	13	20	3	10	17	II	3	10	17	24	III	7	14	21	IV	5	12	19	26	2	9	16	23	VI	7	14	21	VII	4	11	18	25																			
	6	13	20	27	X	11	18	25	XI	8	15	22	29	6	13	20	27	I	11	18	25	II	8	15	22	III	8	15	22	29	IV	12	19	26	V	10	17	24	31	7	14	21	28	VII	12	19	26	VIII	9	16	23	30																		
II	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70																																																				

b) to train Masters as 2012 year enterants
Specialty 8.10010103 “Electrification and automation of agriculture”

Course	2013 year																			2014 year																																														
	September					30	October				28	November				December				30	January					27	February				24	March				31	April			28	May				June				30	July			28	August												
	2	9	16	23	IX	7	14	21	X	4	11	18	25	2	9	16	23	XII	6	13	20	I	3	10	17	II	3	10	17	24	III	7	14	21	IV	5	12	19	26	2	9	16	23	VI	7	14	21	VII	4	11	18	25														
II	7	14	21	28	X	12	19	26	XI	9	16	23	30	7	14	21	28	I	11	18	25	II	8	15	22	III	8	15	22	29	IV	12	19	26	V	10	17	24	31	7	14	21	28	VII	12	19	26	VIII	9	16	23	30														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52														

Symbols:

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- Theoretical study
- Examination period
- Vacation

X
II
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- Manufacturing Practice
- Diploma planning
- State certification

II. PLAN OF STUDYING PROCESS
Specialty 8.10010103 “Electrification and automation of agriculture”

№	Course title	The total amount		Forms of knowledge control according to semesters			Classroom hours			self study	The practical training		Distribution of weekly hours for courses and semesters			
		acad hours	credits	course project	exam	test	whole	including			educational practice	manufacturing practice	1 year		2 year	
								lectures	laboratory classes				practical classes	1-st	2-nd	3-d
		Quantity of weeks for semester			18	18	10									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
I. NORMATIVE ACADEMIC DISCIPLINES																
1.1. Cycle of humanitarian and socio-economic training*																
1	Ukrainian language (Russian)	216	6,0		3		164			164	52			2	2	2
2	Philosophy of science and innovation development	54	1,5		1		36	18		18	18			2		
The total number of cycles		270	7,5		2		200	18	0	182	70			4	2	2
1.2. Cycle of professional and practical training*																
1	Electricity for agriculture	108	3		2		42	24	18		48				2	
2	Design of electrification, automation and energy	108	3	KП	1		36	18		18	54			2		
3	Alternative energy in agriculture	108	1			1	36	18	18		72			2		
4	Electrical technologies in agriculture	108	3			2	18	9	9		72				1	
5	Technology maintenance and repair of power equipment and automation	108	3		1		54	18	18	18	36			3		
6	Occupational health in the field (Electrical)	108	3		2		36	18	18		54				2	
7	Software for Master's programs	108	4			2	20	9		9	70				1	
8	Informative Technology	72	3			2	36	18	18		36				2	
9	Computer Integrated Technologies for electrification and automation in agriculture	72	3			1	20	9		9	52			1		
10	Electric agricultural machines, units and production lines	108	3		1		36	18	18		72			2		
11	Instruments to ensure research	72	3			2	36	18	18		18				2	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
12	Civil protection	72	3			2	18	9		9	54				1	
13	Technology Research	72	3			2	18	9		9	54				1	
The total number of cycles		1152	29	1	5	7	388,0	186,0	135,0	63	638,0			10,0	11,0	
2. SELECTIVE COURSES																
2.1. University's Choice Disciplines																
2.1.1. Cycle of humanitarian and socio-economic training*																
1	Agricultural, land and environmental law	72	2,0			1	36	18						1		
2	Strategy of sustainable development of nature and society	72	2,0			1	36	18						1		
The total number of cycles		144	4,0			4	144	72						4		
2.1.2. Cycle of professional and practical training*																
Master's program "Computer-integrated process control systems in the fields of agriculture"																
1	Information technology in control systems	108	3,0	KPI	2		54	18	18	18	36				3	
2	Computer-aided management	108	3,0			2	36	18	18		72				2	
3	Engineering-service automation systems	108	3,0			3	30	10		20	78					3
4	Economic calculations in engineering activities	72	2,0			3	20	10		10	52					2
5	Typical technological objects and processes in the fields of agriculture	144	4,0			3	20	10		10	124					2
6	Modeling of biotechnical objects in the field of agriculture	144	4,0			5	20	10		10	124					2
The total number of cycles		684	19,0	1	1	5	180	76	36	68	486	0	0	0	5	9
Master's program "Process of automation and computer integrated management information and resources for agriculture"																
1	Information technology in control systems	108	3,0	KPI	2		54	18	18	18	36				3	
2	Computer-aided management	108	3,0			2	36	18	18		72				2	
3	Engineering-service automation systems	108	3,0			3	30	10		20	78					3
4	Economic calculations in engineering activities	72	2,0			3	20	10		10	52					2
5	Typical technological objects and processes in agriculture	144	4,0			3	20	10		10	124					2
6	Simulation of information technology systems	144	4,0			5	20	10		10	124					2
The total number of cycles		684	19,0	1	1	5	180	76	36	68	486	0	0	0	5	9
Master's program "Energy Efficient management biotechnical objects"																
1	Information technology in control systems	180	5,0	KPI	2		90	36	36	18	72				5	
2	Typical technological objects and processes in agriculture	180	5,0			3	40	20		20	140					4
3	Modeling of biotechnical objects	144	4,0			3	20	10		10	124					2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
4	Computer simulation of control in agriculture															
5	Calculations of cost-effectiveness of investigations															
6	Neural Networks	180	5,0			3	30	20		10	150					3
The total number of cycles		684	19	1	1	3	180	86	36	58	486	0	0	0	5	9
Master's program "Eelectrified technology and electrical equipment in animal husband"																
1	The electric actuators in automated plants	180	5,0	KPI	2		90	36	36	18	72				5	
2	Simulation of variable frequency for drives, machines and production lines	180	5,0			3	40	20	20		140					4
3	Electrotechnology for processing of agriculture products	144	4,0			3	30	20		10	114					3
4	Engineering activities in maintainance of electric power systems	180	5,0			3	20	10	10		160					2
The total number of cycles		684	19	1	1	3	180	86	66	28	486	0	0	0	5	9
Master's program "Electrified technology and electrical equipment in seed and crop growing"																
1	Electro technology and processing methods in agriculture	180	5,0	KPI	2		90	36	36	18	72				6	
2	Mathematical modeling of technological processes in agriculture	180	5,0			3	30	20	10		150					3
3	Methods and tools for monitoring the effectiveness of electro processing for agricultural products	144	4,0			3	40	20		20	104					4
The total number of cycles		684	19	1	1	3	180	86	46	48	486	0	0	0	6	9
2.2. Students Choice Disciplines																
Production specialization																
Master's program "Computer-integrated process control systems in the fields of agriculture"																
Master's program "Process of automation and computer integrated management information and resources for agriculture"																
1	Methods and means of modern computer-aided process control	216	6,0	KPI	3		40	10	20		166					3
2	Technical equipment, automation equipment and automated control systems	180	5,0			3	20	10	10		160					2
3	Microprocessor control system	180	5,0			3	20	10	10		160					2
4	Optimal Automation	180	5,0			3	20	10		10	160					2
The total number of cycles		576,0	16,0	1,0	1,0	2,0	82,0	30,0	40,0	0,0	486,0	0,0	0,0	0,0	0,0	7,0
Master's program "Eelectrified technology and electrical equipment in animal husband"																
1	Design of electrical power and networks	216	6,0	KPI	3		40	10	20		166					3
2	Electromagnetic processing of agricultural products	180	5,0			3	20	10		10	160					2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	Designing of lighting systems and networks	180	5,0			3	20	10	10		160					2
4	Optical Electrotechnology	180	5,0			3	20	10		10	160					2
The total number of cycles		360,0	16,0	1,0	1,0	2,0	80,0	30,0	30,0	10,0	486,0	0,0	0,0	0,0	0,0	7,0
Master's program "Electrified technology and electrical equipment in seed and crop growing"																
1	Electromagnetic processing of agricultural products	216	6,0	KII	3		50	10	20	10	166					3
2	Electron-ion technology in agriculture	180	5,0			3	20	10	10		160					2
3	Optical Electrotechnology	180	5,0			3	20	10		10	160					2
The total number of cycles		576,0	16,0	1,0	1,0	2,0	90,0	30,0	30,0	20,0	486,0	0,0	0,0	0,0	0,0	7,0
Master program "Energy Efficient management of biotechnical objects"																
1	Operations Research	216	6,0	KII	3		30	10	10	10	186					3
2	Intelligent Systems	180	5,0			3	20	10		10	160					2
3	Neuro Informative Systems	180	5,0			3	30	10		10	150					2
4	Adaptive systems	180	5,0			3	20	10		10	160					2
tal number of cycles		576,0	16,0	1,0	1,0	2,0	80,0	30,0	10,0	30,0	496,0	0,0	0,0	0,0	0,0	7,0
Master's program "Electrified technology and electrical equipment in the agricultural production"																
1	Electrified technology in agriculture	216	6,0	KII	3		30	10	10	10	186					3
2	Agricultural production in the field of corona discharge	180	5,0			3	20	10		10	160					2
3	Electromagnetic processing of agricultural products	180	5,0			3	30	10		10	150					2
4	Spectrographic methods as a treatment for agricultural products	180	5,0			3	20	10		10	160					2
The total number of cycles		576,0	16,0	1,0	1,0	2,0	80,0	30,0	10,0	30,0	496,0	0,0	0,0	0,0	0,0	7,0
Total		1404	39,0	2,0	2,0	11,0	404,0	178,0	76,0	68,0	972,0	0,0	0,0	4,0	5,0	16,0
Practical training				X	10	X										
Preparation and defense of master's thesis				X		16										
Quantity of course projects				3	X	X								1	1	1
Quantity of tests		216	6,0										216			
Quantity of exams		144	4,0											144		
Total		216	6,0									480				
The total number of cycles		3240	90	3,0	9,0	18,0	992,0	382,0	211,0	313,0	2160	216,0	144,0	18,0	18,0	18,0

* Names cycles of disciplines as required by industry standards for higher education approved after 27.08.2010 year, EQC and EPP

III. STRUCTURE OF THE CURRICULUM

The disciplines	Hours	Credits	%
I. Statutory subjects	1332	37	41
1.1 Cycle of the humanities and socio-economic disciplines*	144	4	4,0
1.2 Cycle of professional and practical training disciplines*	1188	33	37
2. Selective Courses	1332	37	41
2.1 Courses at the choice of University	756	21	23
2.1.1. Cycle of the humanities and socio-economic disciplines*	72	2	2
2.1.2 Cycle of professional and practical training disciplines*	684	19	21,0
2.2 Disciplines	576	16	18
3. Other load	576	16	18
In all	3240	90	100

* Names of disciplines cycles in accordance with the requirements of higher education industry standards, ratified after 2007 year, EQH and EPP

IV. SUMMARY TIME BUDGET, WEEKS

Course	Theoretical study	Examination period	Practical training	Preparation of master's thesis	State certification	Holidays	In all
1-st	36	4	8			8	56
2-nd	10	2		5	1		18
In all	46	6	8	5	1	8	74

V. PRACTICAL TRAINING

№	Kind of practise	Semester	Hours	Credits	Weeks
1	Manufacturing of electrical operation	1	144	4	4
2	Research topic of master's thesis according to the	2	216	6	4

VI. COURSEWORK PAPERS AND PROJECTS

№	Subjects	Hours	Credits	Coursework	Course project
1	Comprehensive course project for disciplines “Designing of systems for electrification, automation and energy supply”, “Technology service and repair of energy equipment and means of automation” and “Electric actuator production machines and mechanisms”	36	1		KП
2	Discipline in the chosen sector (specialization)	36	1		KП
3	Discipline at student’s choice	36	1		KП

VII. STATE ATTESTATION

№	Component of certification	Hours	Credits	Weeks
1	Preparation and defense of master's thesis	216	6	6

