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GROKAZ
DEVELOPMENT OF BACHELOR PROGRAM IN AGROECOLOGY
WITH DUAL EDUCATION IN KAZAKHSTAN

Educational program

6B08147 “Agroecology”

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Curriculum (1-2 academic years)

Cycle of discipline	Name of disciplines	Year	Semester	Number of academic credits	Lectures	Practical lessons	Laboratory lessons	Independent work with a teacher	Independent work at HEI	Independent work at enterprise	Total hours	Number of weeks at HEI	Number of weeks at enterprise	% of educational material mastered in production
	University (Cycle of general education disciplines of the compulsory component + general education disciplines of the optional component)	1	**1**	**30**	**80**	**260**		**90**	**470**		**900**	**15**		
	University (Cycle of general education disciplines of the compulsory component + general education disciplines of the optional component+educational practice)	1	**2**	**21**	**40**	**180**	**30**	**60**	**320**		**630**	**12**	**3**	
BDUC	Organic, inorganic and analytical chemistry	1	2	5	**20**	**30**		**15**	**67**	**18**	150			32%
BDUC	Plant ecology	1	2	3	**15**	**15**		**15**	**33**	**12**	90			30%
BDUC	***Educational practice***	1	2	1		30					30			100%
BDUC	University (Cycle of general education disciplines of the compulsory component + minor)	2	**3**	**16**	**60**	**140**		**45**	**235**		**480**	**11**	**4**	
BDUC	Soil science	2	3	5	**20**	30		**15**	**55**	30	150			40%
BDUC	Processing and disposal of waste in the agro-industrial complex	2	3	4	**20**	20		**15**	**37**	28	120			40%
BDUC	Operation of machines and equipment in crop production	2	3	5	**20**	30		**15**	**55**	30	150			40%
BDUC	University (Cycle of general education disciplines of the compulsory component + minor)	2	**4**	**7**	**20**	**90**		**15**	**85**		**210**	**10**	**5**	
BDUC	Agriculture	2	4	5	**20**	30		**15**	**55**	30	150			40%
BDUC	Environmental cartography and GIS	2	4	5	**20**	30		**15**	**55**	30	150			40%
PDUC	Soil diagnostics (Agrometeorology)	2	4	5	**20**	30		**15**	**55**	30	150			40%
PDUC	Regulatory support and document flow in the agro-industrial complex	2	4	5	**20**	30		**15**	**55**	30	150			40%
BDUC	***Practical training***	2	4	3		90					90			100%

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Curriculum (3-4 academic years)

Cycle of discipline	Name of disciplines	Year	Semester	Number of academic credits	Lectures	Practical lessons	Laboratory lessons	Independent work with a teacher	Independent work at HEI	Independent work at enterprise	Total hours	Number of weeks at HEI	Number of weeks at enterprise	% of educational material mastered in production
BDUC	Minor	3	5	5	**20**	**30**		**15**	**85**		150	8	7	
BDUC	Agricultural chemistry	3	5	5	**20**	30		**15**	**45**	40	150			47%
BDUC	Biogeocenology	3	5	5	**20**	30		**15**	**45**	40	150			47%
BDUC	Agroecology of microorganisms	3	5	5	**20**	30		**15**	**45**	40	150			47%
BDUC	Environmental chemistry	3	5	5	**20**	30		**15**	**45**	40	150			47%
BDUC	Plant growing	3	5	5	**20**	30		**15**	**45**	40	150			47%
PDUC	Minor	3	6	5	**20**	**30**		**15**	**85**		150	8	7	
BDUC	Biogeochemistry and ecotoxicology	3	6	5	**20**	30		**15**	**45**	40	150			47%
BDUC	Environmentally friendly technologies and rational use of natural resources	3	6	5	**20**	30		**15**	**45**	40	150			47%
PDUC	Plant protection and quarantine	3	6	5	**20**	30		**15**	**45**	40	150			47%
PDOC	Fertilizer application systems (Soil Fertility Management)	3	6	5	**20**	30		**15**	**45**	40	150			47%
PDUC	Agroecological monitoring	3	6	5	**20**	30		**15**	**45**	40	150			47%
PDUC	***Practical training***	3	6	3		90					90			100%
PDUC	Project management	4	7	5	**20**	**30**		**15**	**85**		150	8	7	
PDUC	Mathematical modeling in agroecology	4	7	3	**15**	15		**15**	**45**		90			17%
PDUC	Selection and seed production of agricultural crops	4	7	5	**20**	30		**15**	**45**	40	150			47%
PDUC	Logistics of production processes in agriculture	4	7	3	**15**	15		**15**	**24**	21	90			40%
PDUC	Technogenic systems and environmental risks	4	7	4	**20**	20		**15**	**37**	28	120			40%
PDUC	Agroecological land assessment	4	7	5	**20**	30		**15**	**45**	40	150			47%
PDOC	Technical regulation in agroecology (Economics and organization of agricultural production)	4	7	5	**20**	30		**15**	**45**	40	150			47%
PDUC	Pre-graduation practice	4	8	22		660					660		15	100%
	FINAL EXAMINATION	**4**	**8**	**8**							**240**			

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Schedule of the educational process

Code	Educational program	Year	Language	Form of study	September				October				November					December				January				February				March					April				May					June				July					August			
					02-06	09-13	16-20	23-27	30-04	07-11	14-18	21-25	28-01	04-08	11-15	18-22	25-29	02-06	09-13	16-20	23-27	30-03	06-10	13-17	20-24	27-31	03-07	10-14	17-21	24-28	03-07	10-14	17-21	24-28	31-04	07-11	14-18	21-25	28-02	05-09	12-18	19-23	26-30	02-06	09-13	16-20	23-27	30-04	07-11	14-18	21-25	28-01	04-08	11-15	18-22	25-29
					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	
6B08147	Agroecology	1	R	Main EP								M							M	E	E	E	=	=								M				D_AES	D_AES	M/D_AES	EP_AES	E	E	E	OSS	SS	SS	SS	SS	SS	SS	SS	SS	=	=	=	
6B08147	Agroecology	2	R	Main EP								M				D	D_AES	D_AES	M/D_AES	E	E	E	=	=								M			D_AES	D_AES	D_AES	D_AES	M/D_AES	I_AES	I_AES	I_AES	E	E	E	OSS	SS	SS	SS	SS	SS	=	=	=	
6B08147	Agroecology	3	R	Main EP								M	D	D	D	D	D_AES	D_AES	M/D_AES	E	E	E	=	=								M	D	D	D	D	D_AES	D_AES	M/D_AES	I_AES	I_AES	I_AES	E	E	E	OSS	SS	SS	SS	SS	SS	=	=	=	
6B08147	Agroecology	4	R	Main EP								M	D	D	D	D_AES	D_AES	D_AES	M/D_AES	E	E	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	F	F	F	F								

Legend:

- theoretical training
- I Internship
- D dual training
- F final examination
- SS summer semester
- M midterm control
- EP educational practice
- E examination session
- OSS organizational week of the summer semester
- = holidays

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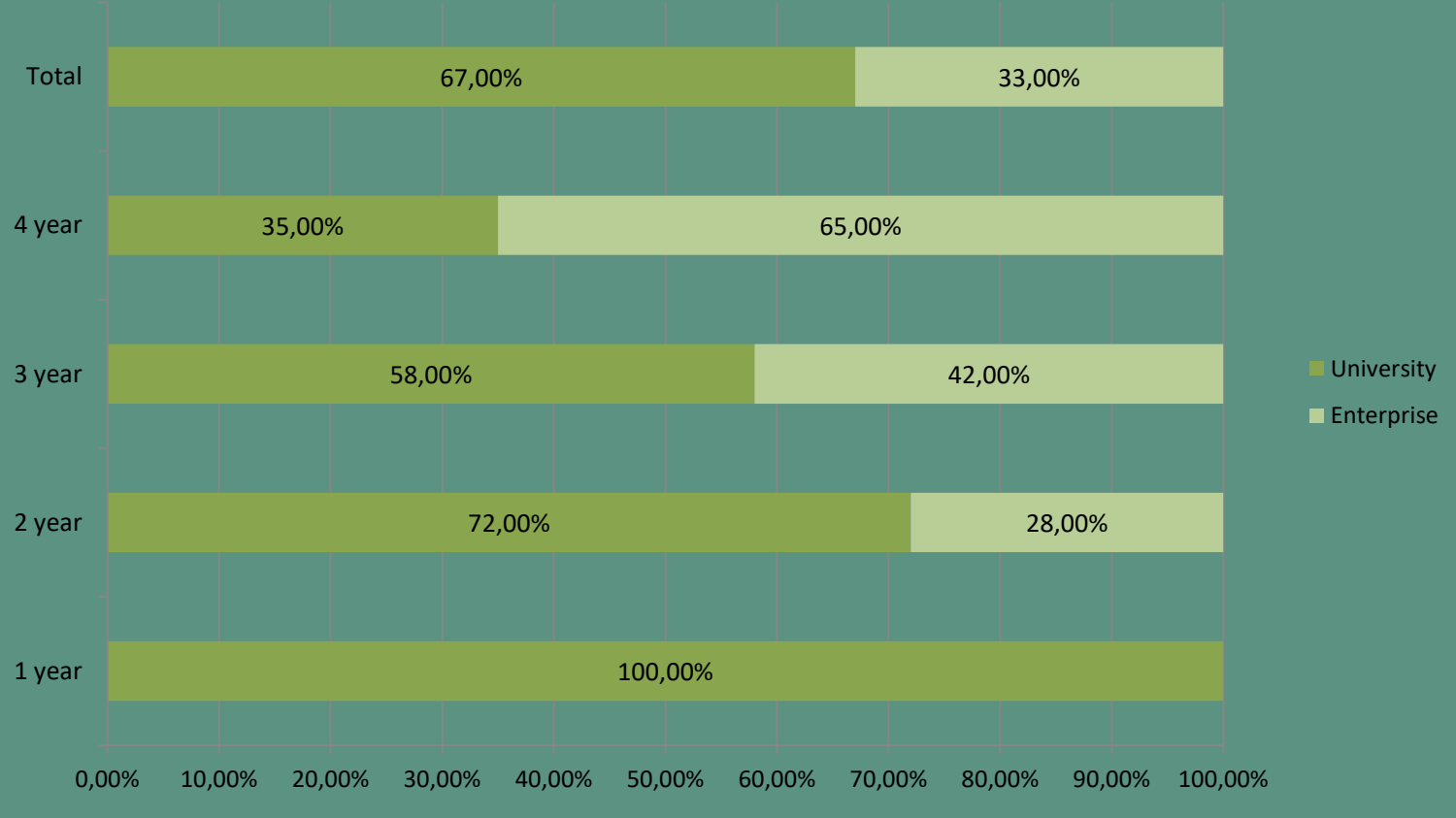
The ratio of hours of theory and practice over four years



During the period of industrial and pre-graduate internships 3-5 students will be employed under a contract with payment.

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Mentors identified for practical training of students

Saniya Tulkubayeva – general mentor from the enterprise, Scientific Secretary, Doctor of Agriculture Sci. Experience – 21 years.

Yuriy Tulayev – mentor, Head of the Laboratory, Candidate of Agriculture Sci. Experience – 17 years.

Alyona Zinchenko – mentor, Head of the Laboratory, Master of Agriculture Sci. Experience – 12 years.

Svetlana Titkova – mentor, Head of the Laboratory, Scientist Agronomist. Experience – 39 years.

Svetlana Somova – mentor, Senior Researcher, Candidate of Agriculture Sci. Experience – 18 years.

Ivan Sidorik – mentor, Senior Researcher, Scientist Agronomist. Experience – 41 years.

Bakhitkul Tynyspayeva – mentor, Senior Researcher. Experience – 36 years.

Zinagul Agibayeva – mentor, Senior Researcher. Experience – 31 years.

Dariya Lynnik – mentor, Researcher, Master of Natural Sci. Experience – 3 years.

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Laboratory of Agrochemical Research

Mentor – Svetlana Titkova, Head of the Laboratory, Scientist Agronomist

Discipline: Organic, inorganic and analytical chemistry

Competencies: Practical classes will allow students to predict chemical reactions, establish relationships between the structure of a substance and its chemical properties, use modern chemical terminology and carry out calculations based on the basic concepts and laws of chemistry.

Discipline: Agrochemistry

Competencies: In practical classes, students will work with agrochemical instruments to determine the chemical composition of soils, plants and fertilizers. They will also carry out analytical work to determine agrochemical indicators, using methods of visual and chemical diagnostics of mineral nutrition of plants, learn to adjust the methods and timing of applying mineral fertilizers, as well as carry out quality control of their application.

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For practical training of students, the «Zarechnoye» AES has:

Testing laboratory

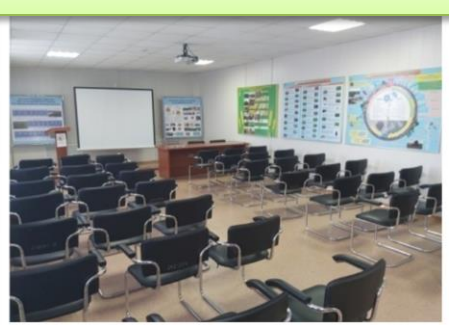


Scientific equipment


Machine and tractor park



Classroom



Scientific experimental fields



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THANK YOU!

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