Graduate Study Programme in English: **Digital Agriculture**
is a study with two majors:
1. **Crop Production**
2. **Animal Production**

- All courses are conducted in English language
- Graduate University Study Programme in English: Digital Agriculture lasts for two years (four semesters) during which the candidate must acquire at least 120 ECTS credits
- Upon completion of the graduate university study programme in English: Digital Agriculture students gains the academic title Master of Agriculture (M. Sc. in Agriculture)
- The study programme in the first year of study (i.e. first and second semester) is the same for both majors, and the study programme in the second year of study (i.e. third and fourth semester) is different and separated by majors.
- The study programme of the first year of study contains 14 compulsory courses with a total of 60 ECTS credits.
- The study programme of the second year of the Plant Production major contains 11 compulsory courses (a total of 41 ECTS credits), while the study programme of the second year of the Animal Production major contains 10 compulsory courses (a total of 36 ECTS credits).
- The remaining 19 ECTS credits in Plant Production major and 24 ECTS credits in Animal Production major are going to be achieved by students taking the courses selected from the list of 29 elective courses.
- Elective courses are divided into six blocks:
    1. Bioeconomics,
    2. Crop production,
    3. Agricultural Engineering,
    4. Computer Science,
    5. Plant Protection,
    6. Animal Production.
- Elective courses are arranged in blocks to make it easier for students to make a complete choice in the direction of emphasizing certain competencies (e.g. in the field of bioeconomics or agricultural technology or computer science...). However, students will be able to choose the entire block with all the elective courses of a particular block or individual courses from the blocks without restriction, depending on their own preferences and competencies they want to emphasize.

First study year obligatory courses

Graduate university study in English **Digital Agriculture**	1st year

Winter semester (semester 1)		**Classes and class types**				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-01	Introduction to digital agriculture	30	-	10	40	3
ICT-02	Basic biostatistics	35	15	10	60	5
ICT-03	Databases	30	15	15	60	5
ICT-04	Agroecology in sustainable agriculture	25	25	-	50	4
ICT-05	Programming basics	30	30	-	60	5
ICT-06	Agricultural engineering	20	15	15	50	4
ICT-07	Agrotechnics and sustainable crop production systems	30	15	5	50	4
	Total					**30**

Summer semester (semester 2)		**Classes and class types**				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-08	Bioeconomy and rural development	40	-	10	50	4
ICT-09	Networks and networking	30	30	-	60	5
ICT-10	Geoinformation technologies in agriculture	20	15	15	50	4
ICT-11	Precision agriculture	20	15	15	50	4
ICT-12	Remote sensing and data analysis	30	15	50	60	5
ICT-13	Horticultural production systems	30	15	5	50	4
ICT-14	Principles of animal breeding and feeding	40	10	-	50	4
	Total					**30**

Second study year obligatory courses, Plant Production major (semesters 3 and 4)

Graduate university study **Digital Agriculture, Plan production major**	2nd year

Winter semester (semester 3)		Classes and class types				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-15	Application of models in irrigation management	15	-	25	40	3
ICT-16	Fertilisation in sustainable agriculture	30	10	10	50	4
ICT-17	Model sin plant protection	30	10	-	40	3
ICT-18	Greenhouse production technology	20	20	10	50	4
ICT-19	Application of unmanned aerial vehicles in agriculture	15	10	25	50	4
ICT-20	Practicum I	-	70	5	75	3
	Total obligatory courses					**21**
	Elective courses					9
	Total					**30**

Summer semester (semester 4)		Classes and class types				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-21	Contemporary pomotechnology	30	-	20	50	4
ICT-22	Contemporary viticulture	20	20	10	50	4
ICT-23	Big data in agriculture	20	20	-	40	3
ICT-24	Practicum 2	-	70	5	75	3
ICT-25	Graduation thesis					6
	Total obligatory courses					**20**
	Elective courses					10
	Total					**30**

Second study year obligatory courses, Animal Production major (semesters 3 and 4)

Graduate university study **Digital Agriculture, Animal Produciton major**	2nd year

Winter semester (semester 3)		Classes and class types				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-26	Animal nutrition and physiology	35	10	5	50	4
ICT-27	Ruminant breeding technologies	25	5	10	40	3
ICT-28	Sensors in the process of monitoring and control of livestock production	20	20	10	50	4
ICT-29	Technology of swine and poultry production	30	-	10	40	3
ICT-20	Practicum I	-	70	5	75	3
	Total obligatory courses					**17**
	Elective courses					**13**
	Total					**30**

Summer semester (semester 4)		Classes and class types				
Code	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-30	Precision livestock farming applications in animal health monitoring	20	5	5		3
ICT-31	Quality and safety of animal products	30	10	10		4
ICT-23	Big data in agriculture	20	20	-	40	3
ICT-24	Practicum 2	-	70	5		3
ICT-25	Graduate thesis					6
	Total obligatory courses					**19**
	Elective courses					**11**
	Total					**30**

Second study year common elective courses

List of elective courses of Block 1 - Bioeconomy

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-32	3	Agroeconomic models in sector modelling	20	-	10	30	3
ICT-E-33	3	Decision support systems and E-marketing	20	10	10	40	4
ICT-E-34	3	Digitalization in agritourism	20	-	10	30	3
ICT-E-35	4	ICT and society	20	-	10	30	3
ICT-E-36	4	Innovative agromanagement	20	-	10	30	3
ICT-E-37	4	English language in digital agriculture	20	10	-	30	3
ICT-E-38	4	Project management in digital agriculture	10	15	15	40	3
		Total					**22**

List of elective courses of Block 2 - Crop Production

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-39	3	Information technology and plant breeding	25	15	-	40	3
ICT-E-40	3	Ecological modelling	15	15	10	40	3
ICT-E-41	3	Nanotechnology and sustainable agriculture	30	10	10	50	4
ICT-E-42	4	Industrial plants production	20	20	10	50	4
ICT-E-43	4	Cereals and forages production	25	20	5	50	4
ICT-E-44	4	Organic plant production	25	10	5	40	3
		Total					**21**

List of elective courses of Block 3 - Agricultural Engineering

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-45	3	Remote sensing in agriculture	15	10	25	50	4
ICT-E-46	3	GNSS and sensors in agriculture	15	10	25	50	4
ICT-E-47	4	Inventarisation and thematic maps of natural resources	15	10	25	50	4
		Total					**12**

List of elective courses of Block 4 - Computer Science

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-48	3	Algorithms and data structures	30	20	-	50	4
ICT-E-49	3	Web development	20	30	-	50	4
ICT-E-50	3	R for data analysis	20	15	5	40	3
ICT-E-51	4	Modelling	20	20	10	40	4
ICT-E-52	4	Object-oriented programming	20	20	10	50	4
		Total					**19**

List of elective courses of Block 5 - Plant Protection

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-53	3	Digitalization in stored product protection	15	-	15	30	2
ICT-E-54	3	Nematodes in sustainable agriculture	25	15	0	40	3
ICT-E-55	3	Ecology of plant pathogens and prognostic models	10	-	20	30	2
ICT-E-56	4	Insect phenology modelling	25	-	15	40	3
ICT-E-57	4	Modelling weed control	20	10	10	40	3
		Total					**13**

List of elective courses of Block 6 - Animal Production

Code	Semester	Course	Lecture	Practice	Seminar	Total	ECTS credits
ICT-E-58	3	Innovative technologies in beekeeping	10	10	-	20	2
ICT-E-59	3	Digital technologies in breeding of herbivore animals	30	10	-	40	3
ICT-E-60	4	Digital technology in omnivore breeding	30	10	-	40	3
		Total					**8**

Learning outcomes

Learning outcomes of the *Digital Agriculture, Plant Production study program*:

1. **Manage collected data and databases (design and model databases; big data management) in agricultural production**
2. **Compare the available hardware and software components of digital agriculture in the field of crop production**
3. **Select the optimal agricultural technique for sustainable crop production in conventional and precision agriculture**
4. **Select available technological solutions, analytical methods and information technologies for analysis, forecasting and decision-making in crop production management**
5. **Design sustainable plant production technology in optimal and specific socio-economic, environmental and technological conditions**
6. **Recommend the application of innovations in agriculture and the system and technologies of precision agricultural production**
7. **Create computer decision-making systems, models and simulations for the management and development of production technologies and agricultural systems.**

Learning outcomes of the *Digital Agriculture, Animal Production study program*:

1. **Manage collected data and databases (design and model databases; big data management) in agricultural production**
2. **Compare the available hardware and software components of digital agriculture in the field of animal production**
3. **Select the optimal agricultural technique for sustainable animal production in conventional and precision agriculture**
4. **Select available technological solutions, analytical methods and information technologies for analysis, forecasting and decision-making in animal production management**
5. **Design sustainable animal production technology in optimal and specific socio-economic, environmental and technological conditions**
6. **Recommend the application of innovations in agriculture and the system and technologies of precision agricultural production**
7. **Create computer decision-making systems, models and simulations for the management and development of production technologies and agricultural systems.**