

AGRICULTURE

Educational classification code of the Republic of Latvia – **51621**

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ANNOTATION

The implementation of the Doctoral Study Program is ensured by the Faculty of Agriculture of the Latvia University of Agriculture in close cooperation with the scientific institutes of the Latvia University of Agriculture, the Latvia Academy of Agricultural and Forestry Sciences and the Latvian Council of Science. It is the only program in the Republic of Latvia, awarding the Doctor's degree of Agriculture in the sub-disciplines “**Field-Crop Cultivation**” and “**Animal Husbandry**”.

The applicants for the doctoral studies in the sub-disciplines “**Field-Crop Cultivation**” and “**Animal Husbandry**” may be the graduates of Master's Study Programs and the graduates with the qualification equated to the Master's degree. The matriculation takes place after the evaluation of an applicant's qualification, the topicality of the planned Doctoral Thesis and the possibilities of the respective structural unit.

The full-time studies at the Doctoral Study Program are planned for 3 years, the part-time studies – for 4 years. The volume of the program is **120** (180 ECTS) credit points (**CP**). The main part constitutes of research in one of the sub-disciplines of agricultural science and the publishing of research results (**92 CP**). Parallel to the scientific research, the program envisages the theoretical studies in the amount of **28 CP**. The acquisition of theoretical competence and knowledge is assessed by means of several compulsory exams in the respective scientific sub-discipline. The plan of doctoral studies and the corresponding programs for the implementation of studies are being developed for each doctoral student.

The doctoral students are offered studies abroad for different periods of time. The Latvia University of Agriculture develops collaboration with foreign higher education institutions and thus obtains additional qualifications of different levels. The study courses of the corresponding level and amount that had been acquired abroad could be equated to and included into the Doctoral Study Program implemented at the Latvia University of Agriculture.

The obtained Doctor's degree ensures the corresponding competence in order the graduate could start his/her independent scientific and pedagogical activities.

The aim of the Doctoral Study Program “Agriculture” is to educate the new generation of scientists for dealing with the scientific problems of agriculture, obtaining more profound theoretical knowledge and acquiring the research methods.

OBJECTIVES OF THE PROGRAM

- To facilitate qualitative research and drawing of new scientific conclusions in crop production, fruit growing, market gardening, ornamental horticulture, grassland management, plant breeding, biotechnology, phytopatology, agricultural entomology, plant protection, soil science, agrochemistry, field-crop cultivation, rearing and breeding of animals, animal feeding, technologies for producing animal husbandry products.
- To ensure the publicity of research results and the development of Doctoral Thesis.
- To acquire the principles of and skills for the organization of scientific and pedagogical activities.
- To facilitate the integration of doctoral students into the international academic environment.

GENERAL REGULATIONS

The program is a regulatory document for the doctoral studies of agriculture at the Faculty of Agriculture of the Latvia University of Agriculture; this document provides for the procedure, content, methodological, scientific level and final results. The provisions, norms and requirements defined in the program are binding to the doctoral students of the Faculty of Agriculture, to their scientific supervisors and to the academic staff involved in the implementation of the Doctoral Study Program.

THE REQUIREMENTS REGARDING THE PRELIMINARY EDUCATION

The Doctoral Study Program may be acquired in the state financed full-time studies, as well as in the physical and legal entities financed full-time and part-time studies.

The doctoral studies at the Latvia University of Agriculture are implemented in conformity with the normative documentation of the Republic of Latvia, the Constitution of the Latvia University of Agriculture <http://www.llu.lv/?ri=392>, the Senate's decision on the Admission Regulations and the Regulations of Doctoral Studies of the Latvia University of Agriculture (Decision No.7-53, made by the Senate of the Latvia University of Agriculture on October 13, 2010) www.llu.lv/getfile.php?id=17302

The citizens of the Republic of Latvia and the persons who have the non-citizen passport of the Republic of Latvia, as well as the persons who have been granted the permanent residence permits, and who have a Master's degree or an academic degree equated to the Master's degree, in conformity with the procedure of an open competition, are admitted to study at the full-time study program financed by state. There may be admitted persons, who have obtained education corresponding to the Master's degree. The foreign applicants shall have education equated to the Master's degree awarded in the Republic of Latvia. The conformity of a diploma is determined by the Academic Information Centre. The persons, who have graduated a Master's Study Program and obtained a Master's degree of Agriculture, are entitled to participate in the competition for the doctoral studies at the Faculty of Agriculture of the Latvia University of Agriculture. The procedure of competition for the state financed study places at a Doctoral Study Program at the Latvia University of Agriculture is provided by the decision No.6-260, made by the Senate on February 10, 2010.

The director of the respective program may determine an entrance examination in the chosen scientific discipline for the applicants, who have obtained a Master's Academic or Professional degrees in another scientific discipline. The applicants for the doctoral studies shall indicate in their applications the scientific sub-discipline of the Doctoral Study Program "**Agriculture**", the theme of the planned Doctoral Thesis and the scientific supervisor, as well as they shall receive the approval from the director of institute and the scientific supervisor to supervise the studies, and the approval from the director of the Doctoral Study Program. The applicant signs the agreement on studies and is matriculated for the doctoral studies by the rector's decree, on the basis of the decision taken by the Council of Science of the Latvia University of Agriculture, where the doctoral student's scientific supervisor is also approved.

The process for the admission for doctoral studies is monitored by the vice-rector of science of the Latvia University of Agriculture, ensured by the director of the Doctoral Study Program and the Department of Doctoral Studies. The decision on the admission of applicants for the doctoral studies is made at the meeting of the Council of Science of the Latvia University of Agriculture, where the applicant and his/her scientific supervisor are present. The applicant informs the members of Council on his/her research indicated in the application.

SUB-DISCIPLINES:

- Field-crop cultivation;
- Animal husbandry.

VOLUME AND DURATION

The duration of full-time studies at the Doctoral Study Program is 3 years or 144 weeks. The duration of one study year of full-time studies is 52 weeks, out of which 4 weeks are the leave. If a student uses his/her academic leave, the full-time studies may last up to 5 years. The volume of studies corresponds to **120 credit points**. The duration of part-time studies is 4 years, and the volume of studies is equal to that of full-time doctoral studies. If a student uses his/her academic leave, the part-time studies may last up to 6 years. A doctoral student may take a break in his/her studies for a period of time due to justifying circumstances and then again to continue his/her studies. The break in studies shall be taken on the basis of the rector's decree.

THE CONTENT OF THE DOCTORAL STUDY PROGRAM

The total volume of the study program is **120** credit points (CP), out of which **28** CP shall be obtained as a result of theoretical studies and **92** CP - as a result of research activities.

The compulsory theoretical studies in the amount of 28 CP:

- The course of scientific sub-discipline or the specialization course of the trend of sub-discipline **10 CP**
- Research methodology in agronomy **6 CP**
- Theoretical course in research trend **8 CP**
- Specialization course of a foreign language for professional purposes **4 CP**

The optional study courses, chosen according to the theme of Doctoral Thesis, the doctoral student submits for the approval to his/her scientific supervisor and includes into the total number of CP to be obtained as a result scientific research activities.

The optional courses may be different international courses, the study courses acquired at the Latvia University of Agriculture or at other higher education institutions in Latvia and those in foreign countries during the fieldwork; the evaluation of such courses in CP is given by the supervisor of Doctoral Thesis after having acquainted with the programs of courses and certificates.

Scientific research activities performed during studies constitute 92 CP; they may include are theoretical courses:

- **Research - 50 CP.**
(including the study course “Applied Multivariate Methods” 2+2 CP and “Research Methodology” - 4 CP).
- **Presentation of research results at the scientific conferences – 12 CP**
- **Publishing of research results - 15 CP**
(including the study course “Development of Scientific Reports” - 3 CP).
- **Development and designing of a Doctoral Thesis - 15 CP.**

The CP structure of the scientific research activities performed during studies comprises:

- identifying, studying and analyzing of special literature;
- choosing of research methodology according to the theme of Doctoral Thesis and its substantiation;
- establishing and performing of experiments;
- development of data base and data processing;
- the optional courses chosen according to the theme of Doctoral Thesis.

Publishing of research results - 15 CP:

- publishing of research results in the significant scientific editions (Scopus, Web of Science) - **5 CP.**
- publishing of research results in EBSCO, CAB Abstracts, LLU Raksti – **4 CP**
- publishing of research results in the reviewed conference proceedings – **1 CP**

The supervisor of Doctoral Thesis evaluates the significance of publications in CP and, if it is necessary, may ask the experts of agriculture accepted by the Latvian Council of Science to evaluate the publication.

Presentation of research results - 12CP:

- at the international conferences - **3 CP**
- at other conferences - **2 CP.**

The supervisor of Doctoral Thesis evaluates the significance of presentations in CP.

The development and designing of the Doctoral Thesis - **15 CP**, and its submission to the Promotion Council.

Doctoral Study Program in Agriculture

Study courses	Volume (CP)	Type of studies	Type of control
1. Compulsory theoretical studies¹	28		
The course of scientific sub-discipline or the specialization course of the trend of sub-discipline	10	Individual studies	Exam
Theoretical course in research trend, including ²	8	Individual studies	Exam
<ul style="list-style-type: none"> Summarizing of scientific literature concerning the research trend and the presentation of the results in front of the audience⁴ 	8 (4)	Individual studies	Exam
<ul style="list-style-type: none"> Individual theoretical course (determined by the supervisor of Doctoral Thesis) with one – two study courses³ 	4	Individual studies	Exam or test
Specialization course of a foreign language for professional purposes ⁵	4		Exam
Research methodology in agronomy	4+2		Exam
2. Scientific research directions of studies	92		
Research, including the study course “Applied Multivariate Methods”, including “Research Methodology”	50 2+2 4	Individual studies	The analyzed scientific literature and performed experimental research shall be indicated
Publishing of research results, including the study course “Development of Scientific Reports”	15 3		The copies of reports shall be submitted
Presentation of research results	12		The copies of program shall be submitted
Development and designing of a Doctoral Thesis	15		The Doctoral Thesis shall be submitted
Total (1+2)	120		

¹. The plan of doctoral studies is approved for each doctoral student individually at least two months after he/she begins studies.

². The doctorate exam in the research trend is organized as a public seminar before the submission of Doctoral Thesis; the content of the exam – the review of literature on the theme of Doctoral Thesis (8 CP).

³. The individual theoretical courses acquired abroad may be equated to the study courses of doctoral studies, if they have been acquired according to a particular program with the identified number of hours and there has been a certifying document issued. The equation of the courses acquired abroad is performed by the respective Promotion Council.

⁴. The doctoral student submits the printed out summary of literature to the respective institute for consideration and reviewing before the organization of a seminar-discussion. The doctoral student submits minutes on the reviewing of literature review to the director of the Doctoral Study Program. The seminar-discussion is organized by the student. The doctoral student has an opportunity to present the report in English or German (and to write the summary on the literature review in a foreign language), and thus also to take the exam in a foreign language for scientific purposes. The process of seminar is evaluated by an examination commission consisting of three members with a Doctor’s degree. If the seminar is organized in a foreign language, the examination commission should include also a representative from the Department of Languages.

⁵. The exam in a foreign language for professional purposes may be taken in a combination with the seminar-discussion in the research trend or by presenting (in English) the research results at a scientific conference.

THE PLAN FOR THE IMPLEMENTATION OF FULL-TIME

Annual volume of studies 40 CP

1st year of doctoral studies

Theoretical studies, 10 CP		
Research methodology in agronomy	6 CP	Exam
Specialization course of a foreign language for professional purposes	4 CP	Exam
Scientific research directions of studies, 30 CP		
Defining of hypothesis and choosing of research methodology according to the theme of Doctoral Thesis, including the study course “Applied Multivariate Methods”, including “Research Methodology”	8 CP 2+2 CP 4 CP	Test or exam
Identifying, studying and analyzing of special literature.	4 CP	The analyzed scientific literature shall be indicated.
Establishment of experiments, observation and obtaining of data.	18 CP	The performed experimental research shall be indicated.
Fieldwork at other higher education institutions		Certification copies.

2nd year of doctoral studies

Theoretical studies, 10 CP		
The specialization course of the trend of scientific sub-discipline – doctorate exam	10 CP	Term paper, doctorate exam
Scientific research directions of studies, 30 CP		
Development of data base and data processing. The analysis of the experimental data of the previous year.	3 CP	The performed experimental research shall be indicated.
Studies and analysis of obtained scientific information in the research direction.	3 CP	The analyzed scientific literature and the performed experimental research shall be indicated.
Establishment of experiments, observation and obtaining of data.	10 CP	The performed experimental research shall be indicated.
Fieldwork at other universities.		Certification copies.
Preparation and publishing of	8 CP	Submission of the copies of

research results, including scientific reports		reports
Presentation of research results	6 CP	Submission of the copies of programs, certificate

3rd year of doctoral studies

Theoretical course in the research direction, 8 CP		
Summary of literature in the research direction with the public presentation, seminar, discussion (it is possible to combine with the foreign language for professional purposes).	8 CP	Seminar-discussion, doctorate exam
Scientific research directions of studies, 32 CP		
Establishment and performing of experiments, development of data base and data processing.	4 CP	The performed experimental research shall be indicated.
Preparation and publishing of research results, including scientific reports	7 CP	Submission of the copies of reports
Presentation of research results	6 CP	Submission of the copies of programs, certificate
Development and designing of Doctoral Thesis	15 CP	

THE PLAN FOR THE IMPLEMENTATION OF PART-TIME

Annual volume of studies 30 CP

1st year of doctoral studies

Theoretical studies, 4 CP		
Specialization course of a foreign language for professional purposes	4 CP	Doctorate exam
Scientific research directions of studies, 22 CP		
Defining of hypothesis and choosing of research methodology according to the theme of Doctoral Thesis, including the study course “Applied Multivariate Methods”, including “Research Methodology”	10 CP 2+2 CP 4 CP	Test or exam
Identifying, studying and analyzing of special literature.	2 CP	The analyzed scientific literature shall be indicated.
Establishment of experiments, observation and obtaining of data.	10 CP	The performed experimental research shall be indicated.

2nd year of doctoral studies

Theoretical studies, 16 CP		
The specialization course of the trend of scientific sub-discipline – doctorate exam	10 CP	Term paper, doctorate exam
Research methodology in agronomy	6 CP	Doctorate exam
Scientific research directions of studies, 15 CP		
Establishment of experiments, observation and obtaining of data. Studies and analysis of obtained scientific information in the research direction.	10 CP	The analyzed scientific literature and the performed experimental research shall be indicated.
Fieldwork at other universities.		Certification copies.
Publishing of research results, including the study course „Development of Scientific Reports”	3CP	Submission of the copies of reports
Presentation of research results	2 CP	Submission of the copies of programs, certificate

3rd year of doctoral studies

Theoretical course in the research direction, 8 CP		
Summary of literature in the research direction with the public presentation, seminar, discussion (it is possible to combine with the foreign language for professional purposes).	8 CP	Seminar-discussion, doctorate exam
Scientific research directions of studies, 24 CP		
Establishment and performing of experiments, development of data base and data processing.	10 CP	The performed experimental research shall be indicated.
Studies and analysis of obtained scientific information in the research direction.	4 CP	The analyzed scientific literature shall be indicated.
Preparation and publishing of research results, including scientific reports	6 CP	Submission of the copies of reports
Presentation of research results	4 CP	Submission of the copies of programs, certificate

4th year of doctoral studies

Scientific research directions of studies, 31 CP		
Studies and analysis of obtained scientific information in the research direction.	4 CP	The analyzed scientific literature shall be indicated.
Preparation and publishing of research results, including scientific reports	6 CP	Submission of the copies of reports
Presentation of research results	6 CP	Submission of the copies of programs, certificate
Development and designing of Doctoral Thesis	15 CP	

STUDY METHODS

The studies at the Doctoral Study Program are implemented in a form of planned lectures and independent studies. The materials of lectures are available to doctoral students at the portal of the Latvia University of Agriculture or individually through e-mail. There are seminars organized related to the dealing with problems.

While studying independently, the doctoral students individually prepare the reviews on scientific literature and develop presentations on particular themes; the themes may be related to the topicalities of industry, a scientific problem, the process of the development of Doctoral Thesis.

There had been elements of e-studies introduced into the study process. The students use the electronic communication to consult with the academic staff concerning issues they do not understand. There had been started the development of study courses in the electronic environment.

Within the study process and particularly in relation to the development of their Doctoral Theses, the doctoral students use an opportunity to have individual consultations with the supervisors of their Doctoral Theses. In order to ensure the methodological quality of Doctoral Theses, the work plan, methodology and reports on the performed activities are considered at the meeting of the Institute.

THE EVALUATION OF THE IMPLEMENTATION

In order to complete the Doctoral Study Program successfully, the doctoral student together with the scientific supervisor develop the individual plan for the whole study period and for each study-year separately. The theme of Doctoral Thesis and the doctoral student's individual plan is considered at the respective institute of the Faculty of Agriculture, but it they are approved at the meeting of the Board of the Faculty, where the members of the Promotion Council of agricultural sciences participate. The certification of the doctoral student's work takes place once in six months at the meeting of the respective institute, and the doctoral student's achievements are being evaluated. The Doctoral Study Program is oriented towards the doctoral students' individual studies in the chosen scientific direction; it is reflected in the distribution of volume between the theoretical part (28 CP) and scientific activities (92 CP).

The study programs of theoretical courses in the sub-discipline are developed at the respective institute and approved by the Board of the Faculty of Agriculture.

Within the study period the doctoral student takes doctorate exams on the theoretical course of the program. Each doctoral student takes 4 exams (Sub-discipline of agricultural sciences - 10 CP; Research Direction - 8 CP; Research methodology in agronomy - 6 CP and “Foreign Language for Doctoral Students for Professional Purposes” (English or German) 4 CP. The exams of courses are open and the examination is carried out by the Examination Commission consisting of 3 members with Doctor’s degree and approved by the vice-rector of science of the Latvia University of Agriculture. The study courses acquired within the theoretical course are being evaluated with a grade according to the 10-point scale, where 10 – with distinction, 9 - excellent, 8 – very good, 7 - good, 6 – almost good, 5 - satisfactory, 4 – almost satisfactory, 3 - poor, 2 – very poor, 1 – unsatisfactory.

The criteria and procedure for the evaluation of knowledge are defined in the Regulations of Studies of the Latvia University of Agriculture: <http://www.llu.lv/getfile.php?id=42210>.

In order to facilitate the quality of scientific work it is possible to attend additionally the study courses “Development of Scientific Reports”, “Applied Multivariate Methods” I and II, and “Research Methodology” (in general). The rest of the scientific work is being evaluated in credit points according to its correspondence to the annual plan and the general readiness of Doctoral Thesis. The most involved person in the evaluation of research paper is the supervisor of Doctoral Thesis, who is competent about the respective research direction and is able to provide qualitative evaluation.

The Doctoral Thesis is submitted to and considered by the Promotion Council of Agricultural Sciences that is approved by the Latvian Council of Science and the rector of the Latvia University of Agriculture. The procedure for the evaluation and defending of Doctoral Thesis is in conformity with the provisions of the Regulations No.1001 “Procedure and Criteria for the Awarding (Promotion) of Doctor’s Scientific Degree” adopted by the Cabinet of Ministers on December 27, 2005.

The developed research paper is initially approbated at the departments of the institutes of the Faculty of Agriculture of the Latvia University of Agriculture, then – at the enlarged meeting organized at the respective institute with the participation of the experts of Promotion Council; the meeting accepts the paper for the further advancement to the Promotion Council.

After the successful defense of Doctoral Thesis and, on the basis of decision taken by the Promotion Council on the awarding of a scientific degree, the rector of the Latvia University of Agriculture passes a decree on the issuance of the state acknowledged Doctor’s University diploma. The diploma is signed by the rector of the University and the chairperson of the respective Promotion Council.

PLANNED AND ATTAINABLE RESULTS

The students, studying in the program, acquire knowledge, skills and competences, corresponding to the 8th level of the European Qualifications Framework (EQF).

As a result of theoretical studies and the performance of scientific activities, there are prepared scientists and highly qualified specialists, who have acquired **more profound knowledge** of agricultural sciences (plant and animal science) and scientific methodology.

Doctoral students **acquire the skill** to perform independently and to lead the scientific research, to develop project applications; they acquire the skills of team management; they are able to become a member of the groups of researchers working on scientific projects in Latvia and in other countries; they are able to present the research results at the international and national

scientific conferences. They acquire the skill to prepare the internationally recognized scientific publications.

They **are competent** to deal with the scientific agricultural problems independently, to define the basic research problems and to advance the hypotheses, to discuss these issues at the national and international level, to work at scientific or higher education institutions, and to take academic or administrative positions in public administration and agricultural production. They are able to create new knowledge in agricultural industry and to provide their original contribution for its development. They are competent to perform pedagogical duties for the education of prospective scientists.

The theoretical acquisition of the study program and the development of Doctoral Thesis ensure the attainment of the above mentioned study results.

THE SCIENTIFIC DEGREE TO BE OBTAINED

Doctor's degree of Agricultural Sciences (Dr. agr.) with the indication on the particular sub-discipline, where the Doctoral Thesis has been developed.

THE EVALUATION OF THE PROGRAM

The Faculty of Agriculture of the Latvia University of Agriculture is the only one in Latvia offering the doctoral studies in the sub-disciplines "**Field-Crop Cultivation**" and "**Animal Husbandry**" of the agricultural sciences. The research in these sub-disciplines has good traditions in Latvia; these studies facilitate the development of science, education, agricultural production, environmental protection, as well as the introduction of new technologies.

Both the structural units of the Latvia University of Agriculture and the cooperation projects with the scientific institutions in Latvia and abroad serve as the base for studies, used by the Faculty of Agriculture of the Latvia University of Agriculture for the implementation of Doctoral Study Program.

The cooperation with the higher education institutions in Latvia is limited, because no higher education institution offers agricultural study programs. However, there had been successful cooperation developed with the Faculty of Biology of the University of Latvia.

The Doctoral Study Program, implemented at the Faculty of Agriculture of the Latvia University of Agriculture, has close cooperation with the universities of Sweden, Germany, Norway, Poland, University of Michigan in the USA, universities of Denmark, Australia, Estonia, Lithuania and other countries. The collaboration enables to improve the study program, to improve the qualification of the supervisors of doctoral students, to supplement the stock of specialization literature, to ensure the acquisition of latest research methods and methodologies by doctoral students. It enables the doctoral students to widen their professional horizon, consolidate their knowledge of foreign languages, facilitates the acquisition of new information and the establishment of contacts.

The implementation of the program facilitates the integration of studies and research at the University, facilitates the improvement of academic life.

INFORMATION ON THE ACADEMIC STAFF

The academic staff from different Faculties of the Latvia University of Agriculture is involved in the implementation of the study process; however, it is basically the academic staff of the Faculty of Agriculture. In total there are 30 members of academic staff, employed at the Latvia University of Agriculture, are involved in the implementation of the study program. The supervisors of doctoral students, involved in the implementation of the Doctoral Study Program "Agriculture", have high-level scientific qualification. The doctoral students are supervised by the State Professors, Associated Professors, Assistant Professors and senior researchers.

The supervisors of Doctoral Theses are the leaders or executors of the experts and grants of the Latvian Council of Science. A part of the scientific supervisors take part in the execution of international scientific projects.

Approved at the meeting of the Board of the Faculty of Agriculture of the Latvia University of Agriculture on November 28, 2011.