



Latvia University of Life Sciences and Technologies

Doctoral School

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Doctoral Study Programme

FOOD SCIENCE

General information about the programme

Education Classification Code of the Republic of Latvia: 51541

Accredited till 15 December 2028

Director of Study Programme: **Inga Ciproviča**, Professor, Dr. sc. ing.

Study programme of Faculty of Agriculture and Food Technology

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Nominal length of full time studies: 3 years

Qualification: Doctoral degree Doctor of Science (Ph.D.) in Engineering Science and Technology

Annotation

The content of study programme which is in force at present has been upgraded and supplemented taking into consideration suggestion by the Accreditation Commission (June, 2010) and the approved standard of doctoral studies LBTU (LBTU Senate decision Nr.11-119, June 9, 2023) and is organized in compliance with the Law on Latvian High Schools and other normative documents which is in force in the Republic of Latvia and regulation documents signed by the Senate of LBTU.

Degree obtained is a Doctor of Science (Ph.D.) in Engineering Science and Technology.

The objective of doctoral study program is to prepare qualified specialists for the teaching and research work with a competence corresponding to the international standards in food science and with a doctor degree in engineering science.

The tasks of doctoral study programme are:

- to acquire profound knowledge in theoretical and elective courses of Food Science,
- be able to formulate, investigate and deal with current problems of Food Science in accordance with the principles of scientific research,
- acquire the newest methods of investigation and be able to apply them into practice, acquire the newest information technology investigations for planning and data processing,
- reach high level skills in the foreign languages use for research and continuing studies,
- be able to acquaint, report and publish his/her work results on the national and international level,
- work out a promotion work for scientific qualification and be ready to defend in order to be awarded a doctor degree of engineering;
- acquire the skills and experience of pedagogical work necessary for the academic staff, loaded university academic staff.

Learning outcomes

Knowledge: deeper know and understand theoretical and empirical research methodology, scientific language/terminology of Food Science; systemically understanding of problems and theories in the field of Food Science research; understand importance of: theoretical and practical innovations/novelty in the field of Food Science.

Skills – able to do theoretical and empirical investigations in Food Science in cooperation with other persons involved in the investigation and studies; able to assess and choose independently appropriate research methodology; able to improve scientific competence in the frame of projects, participating and presenting results/reporting in scientific conferences, discussing in seminars, symposiums and work groups; able to develop/create new knowledge and understanding on existing knowledge and their practical usage implementing important and genuine investigation results, part of which is on the level of internationally indexed publications and gaining success appropriate to the international level of the field; able to assess responsibly the field of investigation and its results in the context of interdisciplinary research and sustainable development; able to supervise research or developmental tasks of Food Science at work, communicate on the field of investigation with scientists and society in general.

Competence: able to put forward innovative research ideas independently, analyze, synthesize and assess them critically in the field of Food Science and interdisciplinary research context; able to carry out important scientific investigations and implement innovations responsibly, independently and critically, able to publish investigation results in Latvia and abroad in internationally recognized issues, i.e. indexed issues; able to plan, structure and manage scientific projects, i.e. international ones responsibly and independently; able to supervise scientific theses, lead a team or be a team member, communicate with colleagues, scientists and society in the appropriate expert field; able to promote the development of Food Science and social progress in the knowledge society emphasizing its sustainability opportunities.

Sub-branches of the Food Science: Food and beverage technologies.

Length of studies

Full time: 3 years = 48 weeks x 3 = 144 weeks.

Doctoral students have rights to use two academic leaves (2 x 12 months) as well as cancel studies because of plausible reasons and to renew their studies again.

Total range – 180 CP/180 ECTS:

Doctoral thesis – 150 CP/150 ECTS,

Theoretical studies – 30 CP/30 ECTS

Parts	CP/ECTS	Demands
Theoretical studies	30/30	
Doctoral thesis	150/150	
Investigation, writing and designing of thesis.	105/105	Defence of thesis in the Promotion Council of Food Science
Preparation of scientific articles for publishing.	30/30	Publications on a study results in peer reviewed issues recognised by the Latvian Council of Sciences including two scientific journals; including 4 ECTS course <i>Preparing of Scientific papers</i> .
Presentation of the study results	15/15	Reports in international scientific conferences/congresses/seminars
Totally:	180/180	

Theoretical studies of Food Science

The study subjects	Test	CP/ ECTS	1 st year		2 nd year		3 rd year	
			1 sem.	2 sem.	3 sem.	4 sem.	5 sem.	6 sem.
1.Compulsory part		30/30						
Scientific research methodology	exam	6/6	6					
1.2 English for Research Professionals	exam	6/6		6				
1.3 General theoretical course in the branch	exam	9/9				9		
1.4 Special theoretical course in the branch of promotion work	exam	9/9						9

Implementation plan of the doctoral study programme in Food Science for full-time studies

1 year

Theoretical studies, 12 CP /12 ECTS		
English for Research Professionals	6 CP / 6 ECTS	Promotion exam
Scientific research methodology	6 CP / 6 ECTS	Exam
Elaboration of the descriptive part of promotion work, publication and approbation – 48 CP / 48 ECTS		
1. Preparation of methodological basis for the theoretical research, included course“ Scientific writing”; 2. Preparation of methodological and material basis for the experimental research	30 CP / 30 ECTS, included ”Preparation of scientific papers”, (4 CP / 4 ECTS) (voluntary subject)	

2. Preparation of a report and its presentation at the scientific and practical conferences	9 CP / 9 ECTS Latvia - 3 CP Abroad - 5 CP	Copy of conference programme
3. Preparation of a publication and presentation of the obtained research data	9 CP / 9 ECTS Latvia - 3 CP Abroad - 6 CP	Copy of publication

2 year

Theoretical studies, 9 CP / 9 ECTS		
General theoretical course in the branch	9 CP / 9 ECTS	Promotion exam according accepted program by Promotion Council
Elaboration of the descriptive part of promotion work, publication and approbation – 51 CP / 51 ECTS		
1. Elaboration of the descriptive part of promotion work	33 CP / 33 ECTS	Analyses of experimental work and literature
2. Preparation of a report and its presentation at the scientific and practical conferences	9 CP / 9 ECTS Latvia – 3 CP / 3 ECTS Abroad - 5 CP / 5 ECTS	Copy of conference programme
3. Preparation of publication and the presentation of obtained research data	9 CP / 9 ECTS Latvia – 3-6 CP / 3-6 ECTS Proceedings of LBTU – 6-8 CP / 6-8 ECTS Abroad – 6-9 CP / 6-9 ECTS	Copy of publication

3 year

Theoretical studies, 9 CP / 9 ECTS		
Special theoretical course in the branch of promotion work	9 CP / 9 ECTS	Completion of the theoretical and experimental part of the promotion work, 2 reviewers from Institute where promotion work is worked out
Elaboration of the descriptive part of promotion work, publication and approbation – 34 CP / 51 ECTS		
1. Elaboration of the descriptive part of promotion work	12 CP / 12 ECTS	
2. Preparation of a report and its presentation at the scientific and practical conferences	12 CP / 12 ECTS Latvia – 3 CP / 3 ECTS Abroad – 5 CP / 5 ECTS	Copy of conference program
3. Preparation of a publication and presentation of the obtained research data	12 CP / 12 ECTS Latvia – 3-6 CP / 3-6 ECTS Proceedings of LBTU – 6-8 CP / 6-8 ECTS Abroad – 6-9 CP / 6-9 ECTS	Copy of publication
4. Drawing up of the promotion work and its summary	15 CP / 15 ECTS	

Annotations of the doctoral study Theoretical subjects of Food Science

Annotation

Deductive and inductive cognition. Structuring of the doctoral thesis. Most frequent error analysis. The collection, processing, analysis and interpretation of results, approaches and methods mathematical. The problem of the representativity. Statistical sets, the distributions and characteristics. Formulating and testing hypotheses. Specificity of processing methods, their relevance for research task and the empirical material, choosing the most appropriate methods. Partial development of the thesis.

Learning outcomes

*The course of study for doctoral students acquire **knowledge** of the implementation of the common regularities of scientific research, starting with the determination of the basic conditions of the study (subject, purpose, a working hypothesis, research objectives), formulation of thesis content outline, information collection, computer processing and interpretation of results and ending with the thesis writing and defence conditions. Doctoral students develop **skills** to independently choose the conditions for rational implementation of the thesis, including the choice of the most appropriate mathematical methods and its application for the meaningful interpretation and presentation of the results. Following the course of learning doctoral students are **competent** to independently perform scientific work, also choose, develop and defend a dissertation.*

English for Research Professionals (a core course for doctoral students 6 CP, promotion examination) associate professor, Dr. paed. Tatjana Šinkus; associate professor, Dr. sc. ing. Māra Dūma; associate professor, Dr. philol. Inese Ozola.

The study course includes a systematic coverage of the knowledge and skills needed to succeed in research work. It includes focus on improving scientific writing skills, presentation and oral skills (discussion and fluency building), research vocabulary building, and search and selection of relevant information, using authentic research literature. Teaching and independent studies are combined. Diverse methods are used in the teaching-and-learning process: Role play, debate, discussion, textual and vocabulary work. Doctoral students will become familiarized with the European Research Area and will acquire the formal styles used in journal publications and conference contributions. Different forms of writing, including literature reviews, research proposals, conference submissions and formal letters, are covered. The key principles of communication in the classroom, authenticity in terms of tasks and texts, learner autonomy, and critical thinking and analysis underpin all the activities. Information communication technologies (ICT) are widely used in the classes. The course includes practical classes, seminars and workshops, and ends with a final examination.

Learning outcomes

Knowledge: *Doctoral students will become aware of and understand the role of the ERA. They will recognize and understand the formal styles used in research publications and conference contributions in the English language. They will become familiarized with how to prepare a successful research proposal, a Power Point presentation, a poster, and a review of research literature, and how to write formal letters to journal editors, foreign researchers, and conference organizers.*

Skills: *Doctoral students will be able to investigate, evaluate and use creatively authentic research literature in English for their own research needs; they will be able to discuss, provide argumentation and find solutions to research problems in their fields of interest. They will be able to develop their own research proposals and use the formal writing style in their own contributions, submissions and correspondence.*

Competence: *Doctoral students will be able to function confidently in an English-speaking academic and professional environment. They will be able to plan, organize and conduct their professional and research activities in the English language to achieve their set goals.*

General theoretical course in the Food Science,(9 CP, promotion examination)
professor, Dr. sc. ing. Inga Ciproviča.

Annotation:

The study course program includes the scientific basis of food and beverage technologies science sub-branches: food chemistry, food processes and equipment, food quality, food microbiology. The course program is designed so that the doctoral student, after mastering this course, has the highest level of knowledge and understanding of the research topicalities, findings and problem situations of a certain sub-branch of food and beverage technologies science. In the process of acquiring the course, doctoral students develop skills of compiling analytical scientific literature, which is the basis of theoretical knowledge for the development of the doctoral thesis.

Knowledge - *deeper knowledge of processes occurred in food production, of chemical, microbiological, physical and sensory changes provided the high quality of food products;*

Skills; *to discuss, to analyze to critical evaluate and to systematize information regarding research questions*

Competences: *to understand the new scientific and practical tendencies of food science in Latvia, Europe and world.*

Special theoretical course in the branch of promotion work (9 CP, promotion examination, supervisor).

The doctoral student prepares a summary of the read and analysed scientific articles and monographs corresponding to the branch of promotion work. The supervisor and two experts from the department review the summary and take part in the seminar/discussion arranged by the student. The knowledge of doctoral student is evaluated by a special committee (3 Doctors of Science) where one of the experts is a member of the Board of Food Science.

Knowledge - *deeper knowledge of investigated problem and understanding importance of: theoretical and practical innovations/novelties corresponding to the branch of promotion work;*

Skills; *to discuss, to analyse to critical evaluate and to systematize data and information regarding research questions in corresponding branch of promotion work*

Competences: *able to put forward innovative research ideas independently, analyse, synthesize and assess them critically in the field of Food Science and interdisciplinary research context.*

Practical accomplishment of the doctoral study programme

The regulations and requirements formulated in the program are mandatory for the doctoral students of Food Science branch, their scientific supervisors and academic personnel who take part in the program accomplishment.

The study content is formed by the following main positions:

- ✓ theoretical obligatory studies;
- ✓ accomplishment of scientific research work;
- ✓ presentation of the research results;
- ✓ preparation and designing of the promotion work.

The composition, structure and distribution of theoretical subjects of doctoral studies result from the formulated study objectives and tasks.

Theoretical studies are completed with examinations Examination questions are formulated in compliance with the elaborated programme.

Every year of studies the doctoral student must present at least once his/her report at an international scientific conference or seminar. During the course of studies the doctoral student must provide the needed number of publications for promotion. The doctoral studies are concluded with writing and defending the promotion work.

The sequence of the study programme acquisition is determined by the work plan of the study programme, schedule for the current study year (centralized theoretical courses) and the doctoral student's year work plan. The LBTU study potential is able to provide the acquisition of theoretical course and pedagogical work skills, elaboration of the promotion work and accomplishment of the doctoral student's scientific activities.

The doctoral student together with his/her scientific supervisor works out a study plan for each year where theoretical subjects to be studied and research programme are given (literature studies, places of performing experiments) as well as the envisaged participation at the conferences, seminars and publications. The work plan is approved by the scientific supervisor and it is reviewed at the department meeting in the presence of a member of the promotion board, and then it is submitted to the Doctoral School.

The theoretical studies in the chosen sub-branch are completed with promotion examinations orally. The promotion examination programme in a sub-branch is worked out by the corresponding institute but in the research trend – by the scientific supervisor. Programmes are confirmed at the corresponding institute and promotion board.

Promotion examinations are open and the students are examined by the examination commission of three doctors of sciences confirmed by the LBTU Vice-Rector of sciences. At the examination of the special course of Food Science sub-branch the doctoral student demonstrates his/her general qualification level and knowledge in the certain sub-branch the scientific work is associated with. Time and place of the examination is co-ordinated with the Doctoral School at least two weeks in advance. A protocol is drawn up about the examination procedure.

The research trend examination takes place as a presentation in public in the presence of at least two permanent members of the promotion board. The doctoral student must demonstrate his/her erudition in theoretical and practical issues on the chosen theme with wide references on investigations recognised in Latvia and abroad and literature sources.

After accomplishment of theoretical part of the study programme the doctoral student receives a certificate of a certain standard about the fulfilment of theoretical part of the study programme.

Engineering doctor's degree can be awarded to a doctoral student who has carried out independently an original investigation the results of which are recognised as essential contribution to food science problem research, and the content and methodology of which comply with conventional and international standards of food science.

When the promotion work is written, it is discussed at the department academic meeting and after a positive its assessment by the State Certification Commission and fulfilment of a full volume of the doctoral programme the promotion work is submitted to the Food Science promotion board. The work is assessed taking into consideration references of three independent experts. After a successful defence of the promotion work and taking into consideration the decision of the promotion board on awarding the scientific degree, the University Rector issues an order on awarding a state confirmed university diploma to the doctoral student. The diploma is signed by the University Rector and chairman of the corresponding promotion board.

**Study plan of the
Doctoral study Programme
FOOD SCIENCE**

No.	Code	Study courses	CP	1 st year		2 nd year		3 rd year	
				1.sem.	2.sem.	3.sem.	4.sem.	5.sem.	6.sem.
				type of control		type of control		type of control	
Theoretical study courses									
1	PārZD049	Research Methodology in Food Science	6	Promotion exam (E)					
2	ValoD001	English for Research Professionals	6		Promotion exam (E)				
		German for Research Professionals							
3	PārZD050	Food and beverage technologies	9			Promotion exam in the branch (E)			
4	PārZD051	Course in the research direction	9						Promotion exam in the research direction (E)
In total			30	6	6		9		9
Pētnieciskais darbs									
1	Development of a doctoral thesis, including:		90	24	21	24	9	12	
	<i>CitiD017</i>	<i>Academic Writing and Publishing</i>	6			I			
	<i>MateD001</i>	<i>Multivariate Data Analysis II</i>	3		I				
	<i>MateD005</i>	<i>Multivariate Data Analysis I</i>	3		I				
	<i>ValoI053</i>	<i>Latvian Language I</i>	3		I				
2	Presentation of results obtained in research work		30		3	3	6	9	9
3	Publication of results obtained in research work		30			3	6	9	12
In total			180	30	30	30	30	30	30

Explanations: I – credit test, E – promotion exam.