



## Latvia University of Life Sciences and Technologies Doctoral School

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### Doctoral Study Programme INFORMATION TECHNOLOGIES

#### General information about the study programme

Educational Classification Code of the Republic of Latvia – 51526

Accredited until 20 December 2029

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

Director of the Doctoral Study Programme: **Ivars Mozga**, Professor assistant, Dr.sc.ing.

Faculty of Engineering and Information Technologies

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Admission requirements: master's degree or equivalent higher education in information technology, computer engineering, electronics, telecommunications, computer management and computer science and related fields of science. If the education was obtained in another branch of science, an entrance exam must be taken.

#### Abstract

The Doctoral programme is developed based on *Law on Institutions of Higher Education* and *Law on Scientific Activity* of the Republic of Latvia, Cabinet of Ministers Regulations No.1001 (27 December 2005) *On the Procedure of and Criteria for Awarding of Doctoral Scientific Degree (Promotion)* and programmes for recommendations of accredited experts.

#### Aim

The aim of Doctoral studies is to promote the development of information technology engineering and build a new generation of internationally highly qualified scientists in information technology engineering sub-sector, as well as to ensure the continuity of academic and scientific personnel at the Faculty of Engineering and Information Technologies (IITF).

#### Assignments

According to the programme, the main assignments for the doctoral students are as follows:

- ☐ to solve scientific problems independently and competently;
- ☐ to be competent in research methodology;
- ☐ to gain extensive knowledge in the chosen field of science and bring their original contribution to its development;
- ☐ to blend into a broader scientific context at national and international level with their own level of scientific research;
- ☐ to be skilled both at working independently and in co-operation on a joint interdisciplinary scientific project development;
- ☐ to gain teaching experience and skills to introduce their research findings to their

- national and international audience, and
- to develop and defend the PhD thesis.

### Sub-disciplines

The scientific sub-sectors of Information Technology Engineering Doctoral Studies at the IITF are:

- Computer Control (study courses by two directions *Computer Control of Technical Systems* and *Computer Control of Biosystems*);
- Systems analysis, modeling and design (study course *Systems Analysis*);
- E-Learning Technology and Management (study course *e-Learning Technology*).

Full-time Doctoral Studies: 3 years = 48 weeks x 3 = 144 weeks.

The volume of the full-time studies: 1,2495 CP/week x 144 weeks = **180 credit points** (CP/ECTS). 1 CP = 1 ECTS.

### The volume of the studies is divided into the following:

#### Theoretical Studies (30 CP/ECTS):

- special course at scientific sub-sector or sub-direction – 9 CP,
- special course in research direction – 9 CP,
- professional foreign language course – 6 CP,
- research methodology in information technologies – 6 CP.

#### Scientific Work (150 CP/ECTS):

- research, development and preparation of PhD thesis,
- publishing results of the research,
- presenting results at international scientific conferences.

## 1. Program execution rules and requirements

- 1.1. The program is a regulatory document for doctoral studies in the field of Information Technology of LBTU IITF, which determines the procedure, content, methodological and scientific level and final result of studies.
- 1.2. The conditions and requirements formulated in the program are binding on LBTU IITF doctoral students, thesis supervisors and academic staff participating in the implementation of the program.
- 1.3. The right to participate in the competition for doctoral studies at LBTU IITF in the field of information technology is for persons who have obtained a master's degree in information technology, computer engineering, electronics, telecommunications, computer management and computer science.
- 1.4. For applicants who obtained a master's academic or professional degree in some other branch of science, the director of the relevant program and the institute can set an entrance exam in the chosen branch of science.
- 1.5. The amount of work completed during the doctoral studies must correspond to **180 credit points**, of which **150 CP are intended for the development of the doctoral thesis** (including publication of

research results and presentation of the results), while **30 CP must be obtained in the theoretical study process of the doctoral studies.**

- 1.6. A person who has fully completed a doctoral study program and passed 3 Promotion exams:
  - 1) Special Course at Scientific Sub-sector or Sub-direction of Information Technologies;
  - 2) Special Course in Research Direction;
  - 3) Professional Foreign Language Course.and passed the exam in Research Methodology can apply for a Doctor of Science degree.
- 1.7. The program of Promotion exams are developed by the IITF institute.
- 1.8. The main results of the doctoral thesis must be published (or accepted for publication) in internationally recognized scientific publications.
- 1.9. The results of the doctoral thesis must be presented at international scientific conferences or seminars.
- 1.10. The doctoral thesis must be a completed original research in accordance with international standards with a significant contribution to the further development of the information technology industry, approved in international scientific publications and conferences or seminars.
- 1.11. At the end of doctoral studies, the Doctoral School issues an academic report to the doctoral student, which is coordinated with the supervisor of the doctoral thesis.
- 1.12. Supervisors of doctoral theses are allowed to be doctors of science who carry out research in the field of information technology and who have publications in Latvian and international scientific publications, and who participate in Latvian and international scientific conferences with reports.

## **2. Study content**

The study content consists of the main positions:

- ☐ theoretical studies;
- ☐ development of sections of scientific research work;
- ☐ presentation of results of research work;
- ☐ preparation and presentation of the thesis.

### **2.1. Theoretical doctoral studies**

The content of theoretical studies (30 CP) is reflected in Table 1.

The volume of studies consists of lectures, practical lessons and individual studies.

Doctoral students must pass three Promotion exams in the compulsory theoretical studies:

- 1) Special Course at Scientific Sub-sector or Sub-direction of Information Technologies,
  - 2) Special Course in Research Direction,
  - 3) Professional Foreign Language Course,
- and pass the exam in Research Methodology.

Table 1

### Theoretical Studies

Study courses	Volume (CP)	Control type
<b>1. Special Course at Scientific Sub-sector or Sub-direction of Information Technologies</b>	<b>9</b>	<b>Promotion Exam</b>
1.1. Computer Control of Technical Systems	9	
1.2. Computer Control of Biosystems	9	
1.3. Systems analysis, modeling and design	9	
1.4. E-Learning Technology and Management	9	
<b>2. Special Course in Research Direction</b>	<b>9</b>	<b>Promotion Exam</b>
2.1. Realization of Scientific Research	9	
<b>3. Professional Foreign Language Course</b>	<b>6</b>	<b>Promotion Exam</b>
3.1. Professional English Course	6	
3.2. Professional German Course	6	
<b>4. Research Methodology</b>	<b>6</b>	<b>Exam</b>
4.1. Research Methodology in Information Technologies	6	
Total	<b>30</b>	

## 2.2. Scientific Work (150 CP)

- 2.2.1. The scientific work by doctoral students is carried out independently under supervision of a scientific supervisor. The scientific supervisor follows the progress of scientific work and helps organizing international co-operation, international training courses, and participation in conferences and performing in them.
- 2.2.2. The students during their scientific work may acquire courses which have not been included within the framework of the theoretical studies (in co-ordination with the scientific supervisor).
- 2.2.3. The students during their scientific work have an opportunity to collaborate with specialists or doctoral students from other faculties of LBTU in development of joint interdisciplinary research.
- 2.2.4. The main results of scientific work are international publications and PhD thesis.

## 3. Study quality assurance system

- 3.1. Expertise of individual study plans and their regular control takes place in accordance with "LBTU Doctoral Study Regulations".

- 3.2. Doctoral students regularly report on the progress of their work at doctoral student seminars organized by the Institute of Computer Systems and Data Science.
- 3.3. Doctoral students approve the results of their work by participating in international scientific conferences with reports, publishing research results in international scientific publications, participating in doctoral student courses and work seminars.

#### **4. Control of execution of the program plan**

According to LBTU Doctoral Studies Regulations.

#### **5. Academic staff of the program**

In the implementation of the doctoral study program, heads of study areas, heads of doctoral theses, heads of study courses and members of examination commissions from the Faculty of Engineering and Information Technologies and other structural units of LBTU take part.

#### **6. Possibilities of program implementation**

- 6.1. Doctoral students have access to the entire study and research infrastructure of IITF.
- 6.2. Doctoral students can carry out scientific work in cooperation with other faculties of the Latvia University of Life Sciences and Technologies.
- 6.3. For literature studies, the LBTU Fundamental Library, RTU Fundamental Library, Academic and other libraries are available, where you can familiarize yourself with the latest world literature - monographs, scientific journals and other publications in the field of information technology, also using the Internet.
- 6.4. Doctoral students can take advantage of business trips to international conferences and foreign scientific and educational institutions to conduct research and improve their scientific qualifications.

#### **7. Results of doctoral studies**

At the final stage of the doctoral studies, the doctoral student completes the doctoral thesis and its summary in accordance with the regulations of the LBTU Doctoral Council and defends it in the doctoral council. After successfully defending the doctoral thesis, the doctoral student obtains the degree of doctor of science (Ph.D.) in engineering sciences and technologies, which is confirmed by a diploma issued by the doctoral council.

Program director: Dr.sc.ing., assistant professor I. Mozga  
November 25, 2016

***Considered:***

At the meeting of the Methodological Commission of the Faculty of Information Technologies  
January 25, 2017

***Accepted:***

At the Council meeting of the Faculty of Information Technologies  
February 15, 2017

***Confirmed:***

ITF Dean, Assoc. Prof. Dr.sc.ing. G. Vitols  
February 15, 2017