

TARTU ÜLIKOOL
University of Tartu

Annex to Diploma No OA 000123

This Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the diploma supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications. It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgments, equivalence statements or suggestions about recognition. Information in all sections should be provided. Where information is not provided, an explanation should give the reason why.

1. INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

- 1.1. Family name: **TUDENG**
1.2. Given name: **TUULI**
1.3. Data of birth (day/month/year): **01.04.1990**
1.4. Personal identification code: **49004010016**

2. INFORMATION IDENTIFYING THE QUALIFICATION

- 2.1. Name of qualification and (if applicable) title conferred (in original language):
filosoofiadoktor (füüsika)
Doctor of Philosophy (Physics)
2.2. Main field(s) of study for the qualification: **Physics (code 80342)**
The study programme entered into the Estonian Education Information System on 05.01.2006
2.3. Name and status of awarding institution (in original language):
Tartu Ülikool, public university
2.4. Name and status of institution (if different from 2.3.) administering studies (in original language):
-
2.5. Language(s) of instruction: **Estonian and English**

3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

- 3.1. Level of qualification: **third cycle higher education,**
Estonian Qualifications Framework Level 8
European Qualifications Framework Level 8
3.2. Official length of programme: **4 years**
240 European Credit Transfer and Accumulation System (ECTS) credits
3.3. Access requirement(s): ***magistrikraad* (Master's degree) or corresponding qualification**

4. INFORMATION ON THE CONTENTS AND RESULTS GAINED

- 4.1. Mode of study: **full-time**

4.2. Programme requirements:

The volume of PhD study is 240 ECTS, of which PhD study makes up 60 ECTS and PhD research 180 ECTS. PhD study consists of speciality subjects (36 ECTS), University-wide elective subjects (12 ECTS), practice learning in teaching at university level (6 ECTS) and optional subjects (6 ECTS). In conducting their research, PhD students are advised by the supervisor or the supervisor and co-supervisor(s) approved by the Council of the Faculty (or Institute). The results of scientific research will be presented as doctoral theses. These theses will be defended at public defence in the council of Institute of Physics. The requirements established for PhD theses are set out in the Statutes of Research Degrees of the University of Tartu. For international study- and workexperience, it is recommended for students to study/ make a research during one semester at foreign university or research institution at least.

Learning outcomes:

Upon graduation the successful student

- 1) is familiar with the theories of physics and has a wide overview about the development trends of them;
- 2) has a deep knowledge in theories, development trends and experimental methods, closely related to the research area;
- 3) is capable to predict theoretically evolution of real processes and to verify those predictions experimentally;
- 4) is able to formulate the hypotheses and analyze and evaluate them critically;
- 5) is able to explain the scientific concept of the world, i.e. the theoretical and application aspects of physics, for wider auditory and has relevant teaching skills and experience;
- 6) is aware about the need to life-long learning and continuous development of professional skills;
- 7) is able to document the research results and to present those in writing or orally to different audiences;
- 8) has knowledge on efficient project management principles and is able to lead the working group;
- 9) has understanding of organization and administrative aspects of modern research and development process.

4.3. Programme details (e.g. modules or units studied) and the individual grades/marks/credits obtained:

| Subject code | Subject | ECTS credits | Date | Result | Teaching staff member |
|------------------------------------------------------------|---------------------------------------------------------|--------------|------------|---------------|-----------------------------------------|
| Université Pierre et Marie Curie - Paris 6 (France) | | | | | |
| | Radar Remote Sensing Course | 2.00 | 10.09.2010 | Pass | P. Profeseur |
| University of Tartu | | | | | |
| LOFY.05.031 | Environmental Remote Sensing I | 3.00 | 23.04.2010 | A - Excellent | Õ. Õppejõud |
| LOFY.05.043 | Climate and Policy | 3.00 | 26.05.2010 | B – Very good | R. Õppejõud |
| LOFY.01.043 | Dissertation Seminar for PhD Students | 3.00 | 31.05.2010 | Pass | Õ. Õppejõud |
| LOFY.05.008 | Atmospheric Dynamics I | 3.00 | 16.11.2010 | C - Good | Õ. Õppejõud |
| LOFY.05.030 | General Meteorology | 6.00 | 10.01.2011 | A - Excellent | Õ. Õppejõud |
| USUS.03.096 | Public Speaking (Part 1)* | 1.00 | 23.02.2011 | Pass | RPL committee |
| LOFY.00.005 | Practical Teaching in University | 6.00 | 28.02.2011 | Pass | A. Õppejõud |
| LOOM.02.052 | ERDAS Imagine | 2.00 | 22.03.2011 | Pass | Õ. Õppejõud |
| LOLO.00.067 | Workshop-seminar: How to Give a Popular Science Talk II | 2.00 | 31.05.2011 | Pass | J. Õppejõud |
| LOFY.01.119 | Radar Remote Sensing | 3.00 | 20.04.2012 | Pass | O. Õppejõud |
| LOFY.00.009 | Statistical Data Analysis for Empirical Research | 6.00 | 05.04.2013 | A - Excellent | Õ. Õppejõud, A. Õppejõud, E-M. Õppejõud |
| LOLO.00.064 | Workshop-seminar: How to Give a Popular Science Talk I | 2.00 | 21.05.2013 | Pass | Õ. Õppejõud |
| MJRI.09.029 | The Development Concepts of Estonian Economy | 3.00 | 06.06.2013 | A - Excellent | U. Õppejõud |
| HTHT.00.009 | Learning and Teaching in Higher Education* | 6.00 | 03.12.2013 | Pass | RPL committee |
| LOFY.00.004 | Doctoral Seminar | 18.00 | 30.12.2013 | Pass | Õ. Õppejõud |

LOFY.00.006 Doctoral thesis: Radar applications

180.00

14.02.2014 Defended

Õ. Õppejõud, Ü.
Õppejõud

Total workload

249.00

* Recognised on the basis of prior learning

4.4. Grading scheme(s):

Grading scheme since August 30, 1999

| Grade | Description |
|-------|--------------|
| A | Excellent |
| B | Very good |
| C | Good |
| D | Satisfactory |
| E | Sufficient |
| F | Insufficient |

The examination or preliminary examination is considered passed upon its grading in the range from "E" to "A". In calculating the average grade the following correspondences are applied: A = 5, B = 4, C = 3, D = 2, E = 1, F = 0.

Non-differentiated assessment of academic results is conducted using a system whereby the positive result is defined as "Pass" and the negative result as "Fail".

5. INFORMATION OF THE FUNCTION OF THE QUALIFICATION

5.1. Access to further study:

The doctoral degree is the highest qualification in the Estonian higher education system

5.2. Professional status:

Gives access to positions requiring independent research and development skills

6. ADDITIONAL INFORMATION

6.1. Additional information:

This study programme is included in the study programme group of "Physical sciences" and the studies are conducted according to the rights given by Government of the Republic Regulation No. 178 of 18.12.2008 "Standard of Higher Education"

6.2. Further information sources:

Institution: **University of Tartu
Faculty of Science and Technology**

**Estonian ENIC/NARIC
Academic Recognition Information Centre
Archimedes Foundation**

Address: **Vanemuise 46-202, 51014, Tartu**

L. Koidula 13A, 10125, Tallinn, ESTONIA

www-page: **www.ut.ee**

www.archimedes.ee/enic

Tel: **(+372) 737 5820**

(+ 372) 697 9215

Fax: **(+372) 737 5822**

(+ 372) 697 9226

E-mail: **lote@ut.ee**

enic-naric@archimedes.ee

7. CERTIFICATION OF THE SUPPLEMENT

7.1. Date: 25.02.2014

7.2. Signatures:

7.3. Names: Õnne Õppejõud

Õie Õppejõud

7.4. Capacity: Dean

Specialist for Academic Affairs

7.5. Official stamp or seal

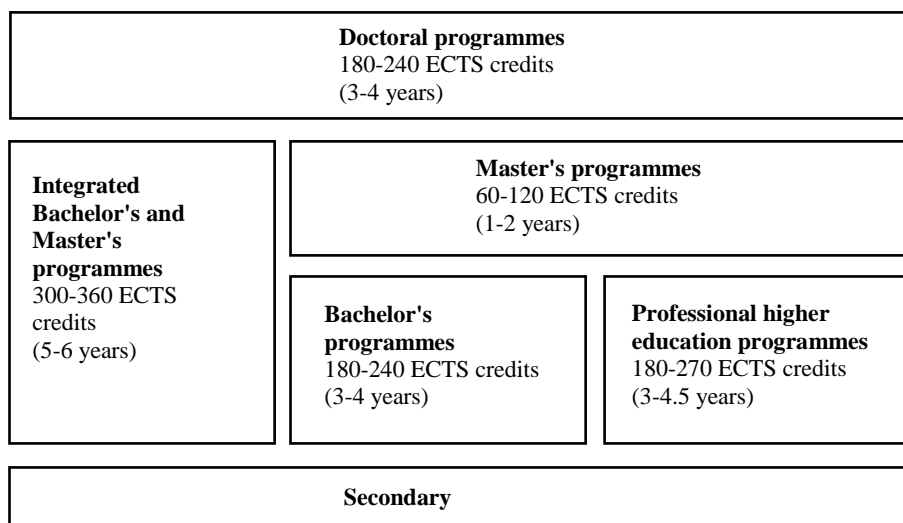
Registration No 6

8. INFORMATION ON THE HIGHER EDUCATION SYSTEM OF ESTONIA

OVERALL ORGANISATION

Higher education in Estonia is regulated by the following legislation: the Republic of Estonia Education Act, the Universities Act, the Private Schools Act, the Institutions of Professional Higher Education Act, the Vocational Education Institutions Act, and the Standard of Higher Education.

As of academic year 2002/2003, the higher education system comprises three cycles, following the Bachelor-Master-PhD model of the European Higher Education Area.



Universities provide professional higher education, bachelor's, master's and doctoral programmes. Professional higher education institutions and some vocational education institutions provide professional higher education. A professional higher education institution may also provide master's programmes. In terms of ownership, institutions are divided into state, public and private institutions.

RECOGNITION OF QUALIFICATIONS

As of 1 January 2012, higher education programmes may be provided only if the quality of the respective study programme group has been assessed and the Government of the Republic has granted a license to provide instruction in the respective group. Annex 3 to Regulation no. 178 of the Government of the Republic of 18 December 2008 "Standard of Higher Education" sets out the study programme groups and cycles of higher education where educational institutions have the right to provide instruction. The right to provide instruction involves the right to issue national diplomas.

QUALITY ASSESSMENT

Since 2009, higher education quality has been assessed by *Eesti Kõrghariduse Kvaliteediagentuur* (Estonian Higher Education Quality Agency), an independent agency.

Quality assessment of study programme groups

Since 2010, the quality of study programme groups has been assessed instead of the former assessment of study programmes. Quality assessment involves assessment of the compliance of study programmes, teaching and study-related development efforts based thereon with legislation, national and international standards and developments the study programme, study programme development, availability of resources, the study process, teaching staff and students are assessed).

Quality assessment takes place once every seven years, unless the Agency has established a term of up to three years based on the results of quality assessment. The result of quality assessment is a decision made by the Assessment Council of the Agency.

Institutional accreditation

Institutional accreditation focuses on the internal quality assurance system of the educational institution and the functionality thereof, incl. the fulfilment of the tasks, duties and functions of the educational institution, the compliance of the management system with the goals and development plan of the higher education institution.

Higher education institutions are required to undergo institutional accreditation once every seven years, but if the Agency has detected any defects in the previous accreditation, it may grant a term of up to three years and during the term the educational institution must undergo the institutional accreditation again. The decision on institutional accreditation will be made by the Assessment Council of the Agency.

ADMISSION REQUIREMENTS

The requirement for access to higher education is secondary education, certified by *Gümnaasiumi lõputunnistus* (Upper Secondary School Leaving Certificate), *Lõputunnistus kutsekeskhariduse omandamise kohta* (Certificate of Vocational Secondary Education) the corresponding qualifications of earlier education systems, and foreign qualifications giving access to higher education. The *Gümnaasiumi lõputunnistus* is issued after 12 years of schooling (9 years of basic education and 3 years of general upper secondary education). In order to complete general upper secondary education it is necessary to take national examinations certified with the national examination certificate.

A higher education institution may introduce further admission requirements, such as entrance examinations, minimum scores of national examinations, interviews, etc.

CREDIT SYSTEM

Student workload is measured in credits. As of academic year 2009/2010, the European Credit Transfer and Accumulation System (ECTS) has officially been in use. One ECTS credit corresponds to 26 hours of work by a student. The workload of one academic year is 1560 hours, which corresponds to 60 ECTS credits.

HIGHER EDUCATION PROGRAMMES AND QUALIFICATIONS

Professional Higher Education Programmes

Professional higher education is higher education of the first cycle, the purpose of which is to acquire the competencies necessary for working in a certain profession or for continuing studies at the master's level. The nominal duration of programmes is 3 to 4 years (180-240 ECTS credits). Midwifery studies and specialised nursing studies last 4.5 years (270 ECTS credits). The qualification awarded upon completion of the programme is *rakenduskõrghariduse diplom* (Diploma of Professional Higher Education) (a grayish-blue diploma form marked E). The qualification gives access to master's programmes.

Bachelor's Programmes

Bachelor's programmes are first-cycle higher education programmes. The purpose of bachelor studies is to broaden the scope of general education, to develop the basic knowledge and skills required for a certain field of study necessary for continuing at the master's level or for access to the labour market. The nominal duration of the programmes is generally 3 years (180 ECTS credits). As an exception, it may be up to 4 years (240 ECTS credits). The qualification awarded upon completion of the programme is *bakalaureus* (bachelor's degree) (a greenish-yellow diploma form marked L). The qualification gives access to master's programmes.

Master's Programmes

Master's programmes are second-cycle higher education programmes. The purpose of master's level studies is to develop the knowledge and skills required for a certain field of study and to acquire the necessary competences in order to enter the labour market or to continue studies at the doctoral level. The access requirement is a first-cycle higher education qualification. The nominal duration of the programmes is 1 to 2 years (60-120 ECTS credits), but with the first-cycle studies it is at least five years (300 ECTS credits). The qualification awarded upon completion of a master's degree programme is *magister* (master's degree) (a silvery diploma form marked M). The qualification gives access to doctoral programmes.

Integrated bachelor's and master's programmes comprise both basic and specialised studies. Such long-cycle programmes are offered in the fields of medicine, veterinary medicine, pharmacy, dentistry, architecture, civil engineering, and class-teacher training. The nominal duration of programmes in medicine and veterinary medicine is 6 years (360 ECTS credits). The nominal duration of other programmes is 5 years (300 ECTS credits).

The graduates receive a qualification (a silvery diploma form marked M) certifying the completion of the integrated study programme. The graduates of a pharmacy, architecture, civil engineering and class teacher training programme are awarded a degree of *magister* (master's degree). The graduates of a medicine, dentistry and veterinary medicine programme are awarded *arstikraad* (Degree in Medicine), *hambaarstikraad* (Degree in Dentistry) or *loomaarstikraad* (Degree in Veterinary Medicine). The qualifications give access to doctoral programmes.

Doctoral Programme

Doctoral programmes represent the third cycle of higher education, the purpose of which is to acquire knowledge and skills necessary for independent research, development or professional creative work. The access requirement for doctoral studies is a degree of *magister* (master's degree) or corresponding qualifications. The nominal duration of programme is 3 to 4 years (180-240 ECTS credits). The qualification awarded upon completion of doctoral studies is *doktor* (doctorate degree) (a golden diploma form marked O). A doctorate degree is a research degree obtained after the completion and public defence of a dissertation based on independent scientific research or creative work.