



VAASAN AMMATTIKORKEAKOULU  
UNIVERSITY OF APPLIED SCIENCES

# DEGREE CERTIFICATE

*Duc Binh Nguyen, 230300A7393*

has successfully completed the required course of study  
and is therefore awarded the degree of

BACHELOR OF ENGINEERING

in

INFORMATION TECHNOLOGY

with grades as indicated in the enclosure.

Vaasa, May 24, 2024

A blue ink signature of Ville Isoherranen, the President of VAMK.

President Ville Isoherranen



Student	Duc Binh Nguyen	Credits	<b>240 cr</b>
Personal identity code	230300A7393	Completed	<b>248 cr with average 2,81</b>
Student number	2001352		
Programme	Information Technology		

Studies	Credits	Assessment Date		
<b>BASIC AND PROFESSIONAL STUDIES</b>	<b>144 cr</b>			
<b>General Engineering Skills</b>	<b>14 cr</b>			
Introduction to Technical Studies	3 cr	HYV		10.11.2019
Finnish Culture and Society	2 cr	HYV		28.03.2022
ICT Entrepreneurship	4 cr	3		05.05.2021
EU Energy Law and Policy	5 cr	s1	HYV	06.06.2022
<b>Language Studies</b>	<b>15 cr</b>			
Finnish for Foreigners 1	3 cr	4		28.12.2019
Finnish for Foreigners 2	2 cr	2		25.01.2020
Finnish for Foreigners 3 (int.)	5 cr	3		07.03.2022
Oral Communication for Technology Students in English	2 cr	4		03.03.2021
Written Communication for Technology Students in English	3 cr	3		04.11.2021
<b>Mathematics</b>	<b>14 cr</b>			
Basics of Technical Mathematics	3 cr	4		05.11.2019
Linear Algebra 1	2 cr	5		13.05.2020
Differential Calculus	2 cr	5		29.11.2022
Basics of Mathematical Software	3 cr	4		29.02.2020
Integral Calculus	2 cr	2		28.03.2021
Differential Equations and Series	2 cr	4		10.05.2021
<b>Physics</b>	<b>9 cr</b>			
Mechanics	4 cr	3		24.01.2020
Electricity and Magnetism	3 cr	4		16.05.2020
Physical Principles of Energy Technology	2 cr	3		28.03.2022
<b>Electrical Engineering and Electronics</b>	<b>13 cr</b>			
Safety at Work and Safety at Electrical Works	2 cr	HYV		16.02.2020
Direct Current Circuits	2 cr	4		30.10.2019
Electronics	5 cr	1		03.04.2020
Circuit Analysis	4 cr	1		21.05.2020
<b>Basics of ICT Skills</b>	<b>21 cr</b>			
Introduction to Programming	5 cr	3		19.01.2020
Cyber Security	3 cr	2		18.05.2021
Information Technology Documentation	3 cr	1		21.12.2020
Basics of Operating Systems	3 cr	1		15.11.2020
Data Network Services	3 cr	1		11.01.2021
Linux Operating System	4 cr	4		10.12.2020
<b>Basics of Telecommunications</b>	<b>10 cr</b>			
Principles of Telecommunications	5 cr	1		07.04.2021
Local Area Networks	5 cr	4		20.04.2020

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<b>Basics of Software Engineering</b>	<b>26 cr</b>		
C Programming	4 cr	3	29.04.2020
Application Development	4 cr	4	12.05.2020
Object Oriented Programming	5 cr	1	25.02.2021
Software Testing	5 cr	k1 1	20.06.2021
Databases and Open Interfaces	5 cr	3	31.03.2021
C++ Programming	3 cr	s2 HYV	14.01.2021

<b>Basics of Embedded Systems</b>	<b>22 cr</b>		
Digital Electronics	5 cr	2	12.02.2020
Basics of Embedded Systems	5 cr	2	21.05.2020
Computer-Aided Design of Electronics	3 cr	2	11.03.2021
Microprocessors, Controllers and Interfacing	4 cr	3	10.03.2021
Energy Technology ICT	5 cr	2	31.01.2021

<b>ADVANCED PROFESSIONAL STUDIES</b>	<b>45 cr</b>		
<b>Software Engineering</b>	<b>15 cr</b>		
Java Server Programming	5 cr	k2 HYV	13.05.2024
Software Engineering Methods	5 cr	4	20.04.2023
Windows Programming	5 cr	k3 HYV	04.09.2023
<b>Cloud Computing</b>	<b>15 cr</b>		
Data Structures and Algorithms in Python	5 cr	5	24.10.2023
Cloud and Mobile Computing	5 cr	3	14.01.2024
Software Engineering Project	5 cr	3	31.01.2024
<b>Embedded Systems II</b>	<b>2 cr</b>		
FPGA Circuits and VHDL Programming	2 cr	k4 HYV	04.09.2023
<b>Telecommunications</b>	<b>8 cr</b>		
Wide Area Networks	5 cr	2	08.12.2022
Network Security	3 cr	1	26.04.2022
<b>Technical Mathematics</b>	<b>5 cr</b>		
Real Analysis	5 cr	3	03.01.2023

<b>OPTIONAL STUDIES</b>	<b>14 cr</b>		
Finnish 1	3 cr	s3 HYV	30.04.2021
Finnish 2	3 cr	s4 HYV	30.04.2021
Finnish 3	3 cr	s5 HYV	30.04.2021
Finnish 4	3 cr	s6 HYV	30.04.2021
Finland 101 - Finnish Working Life and Culture	2 cr	HYV	02.01.2020

<b>PRACTICAL TRAINING</b>	<b>30 cr</b>		
Practical training	30 cr	HYV	27.08.2023
Bachelor's Thesis, Planning and Initiation	3 cr	4	26.09.2023
Bachelor's Thesis, Theory and Implementation	6 cr	4	31.10.2023
Bachelor's Thesis, Final Stage	6 cr	4	12.05.2024

**Bachelor's Thesis Title:** Researching and AI Testing Strategies for Video Management System  
**Assessment:** 4  
**Assessment date:** 12.5.2024

Student Duc Binh Nguyen  
Student number 2001352

### Student mobility

Free mover mobility 15.2.2023–29.7.2023  
Practical Training Abroad, Viet Nam

### Compensated studies

k1 = Software Testing, 20.6.2021, University of Vaasa  
k2 = Full Stack Web Development: Continuous Integration, 19.1.2024, University of Helsinki  
k3 = Full Stack Development, 18.8.2023, University of Helsinki  
k4 = Full Stack Development; Extension 1 and Extension 2, 18.8.2023, University of Helsinki

### Inclusions

s1 = EU Energy Law and Policy, 6.6.2022, Helsinki University  
s2 = C++ Programming, 15.12.2020, Metropolia University of Applied Sciences  
s3 = Finnish 1, 22.11.2018, Seinäjoki University of Applied Sciences  
s4 = Finnish 2, 15.1.2019, Seinäjoki University of Applied Sciences  
s5 = Finnish 3, 17.4.2019, Seinäjoki University of Applied Sciences  
s6 = Finnish 4, 2.5.2019, Seinäjoki University of Applied Sciences

The student's school education was completed abroad in a language other than Finnish or Swedish. The student has thus been exempted from the requirements on Finnish and Swedish stipulated by Decree 1129/2014, 7 §, 1. The student has completed the maturity test in the English language.

Vaasa, May 24, 2024



President Ville Isoherranen



*This document is electronically signed*  
<https://www.vamk.fi/av>

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 (diplomas, degrees, certificates etc.). 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 judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO.

## 1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1	Last name(s)	Nguyen
1.2	First name(s)	Duc Binh
1.3	Date of birth (day/month/year)	23.3.2000
1.4	Student identification number or code (if available)	2001352

## 2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1	Name of qualification and (if applicable) title conferred (in original language)	<i>Tekniikan ammattikorkeakoulututkinto Insinööri (AMK) / Bachelor of Engineering</i>
2.2	Main field(s) of study for the qualification	<i>Information Technology</i>
2.3	Name and status of awarding institution (in original language)	<i>Vaasan ammattikorkeakoulu (Vaasa University of Applied Sciences) State recognised university of applied sciences</i>
2.4	Name and status of institution (if different from 2.3) administering studies (in original language)	<i>Not applicable</i>
2.5	Language(s) of instruction/examination	<i>English</i>

## 3 INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1	Level of qualification	<i>See 8. First-cycle higher education degree (bachelor level). The degree is on level 6 in the National Framework for Qualifications and Other Competence Modules (FiNQF) and the European Qualifications Framework.</i>
3.2	Official duration of programme in credits and/ or years	<i>240 credits (4 years of full time study) Finnish credits are fully compatible with the ECTS.</i>
3.3	Access requirement(s)	<i>The Finnish Matriculation Examination gives general eligibility for higher education. General eligibility is also given by upper secondary vocational qualifications, further vocational qualifications and specialist vocational qualifications. Foreign qualifications which in the awarding country give eligibility for higher education studies, give general eligibility for higher education also in Finland. There is a numerus clausus, i.e. restricted entry, to all fields of study.</i>

## 4 INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1	Mode of study	<i>Full-time</i>
4.2	Programme learning requirements	<i>See 8 and Transcript of Records</i>
4.3	Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained	<i>See Transcript of Records</i>
4.4	Grading scheme and, if available, grade distribution guidance	<i>5 = Excellent 4 = Very Good 3 = Good 2 = Satisfactory 1 = Sufficient HYL = Fail HYV = Pass</i>

4.5 Overall classification of the qualification (in original language) *Not applicable*

## 5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1 Access to further study *Eligible for second-cycle higher education studies*

5.2 Access to a regulated profession (if applicable) *Under the Finnish legislation, a person who has taken Insinööri (AMK) is qualified for posts or positions in the public sector for which the qualification requirement is a first-cycle higher education degree. In some cases, the qualification requirement also includes the completion of studies in certain specified fields of study. The degree falls under the Article 11 of the Directive 2005/36/EC of the European Parliament and of the Council on the recognition of professional qualifications, level d.*

## 6 ADDITIONAL INFORMATION

6.1 Additional information *Vaasan ammattikorkeakoulu has been awarded the Diploma Supplement Label.*

6.2 Further information sources *www.vamk.fi, Vaasa University of Applied Sciences  
www.minedu.fi, Ministry of Education and Culture  
www.oph.fi/recognition,  
www.oph.fi/qualificationsframework  
The Finnish National Agency of Education, the ENIC: European Network of Information Centres in the European Region, and NARIC: National Academic Recognition Information Centres in the European Union, and the National Coordination Point for the European Qualifications Framework (EQF)  
www.karvi.fi, The Finnish Education Evaluation Centre*

## 7 CERTIFICATION OF THE SUPPLEMENT

7.1 Date *Vaasa, 24.5.2024*

7.2 Signature



*Ville Isoherranen*

7.3 Capacity *President*

## 8 INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The description of the higher education system has been prepared by the Finnish National Agency of Education and approved by the Ministry of Education and Culture.

The Finnish education system consists of pre-primary and basic education, general and vocational upper secondary education, higher education and adult education. The compulsory schooling consists of one-year pre-primary education for 6-year-olds and nine-year basic education for children aged 7-16.

Post-compulsory education is given by general upper secondary schools and vocational institutions. The general upper secondary school provides a three-year general education curriculum, at the end of which the pupil takes the national Matriculation examination (*ylioppilastutkinto/studentexamen*). Vocational institutions provide three-year programmes, which lead to upper secondary vocational qualifications (*ammattillinen perustutkinto/yrkesinriktad grundexamen*).

General eligibility for higher education is given by the Matriculation examination, the upper secondary vocational qualification, the further vocational qualification and the specialist vocational qualification.

A foreign qualification that gives eligibility for higher education in the system the qualification belongs to gives general eligibility for higher education also in Finland.

The Finnish higher education system comprises universities (*yliopisto/universitet*) and universities of applied sciences (*ammattikorkeakoulu, AMK/yrkeshögskola, YH*). The universities engage both in education and research and have the right to award doctorates. The universities of applied sciences are multi-field institutions of professional higher education. Universities of applied sciences engage in applied research and development.

First and second cycle higher education studies are measured in credits (*opintopiste/studiepoäng*). Study courses are quantified according to the work load required. One year of full-time study is equivalent to 1600 hours of student work on average and is defined as 60 credits. The credit system complies with the European Credit Transfer and Accumulation System (ECTS).

There are eight levels in the National Framework for Qualifications and Other Competence Modules (the Finnish National Qualifications Framework). Higher education qualifications in Finland are referenced at levels 6 – 8 both in the National Qualifications Framework as well as in the European Qualifications Framework.

### 8.1. University degrees

The Government Decree on University Degrees and Specialisation Studies (794/2004 including amendments) defines the objectives, extent and overall structure of degrees. The universities decide on the detailed contents and structure of the degrees they award. They also decide on their curricula and forms of instruction.

#### 8.1.1. First cycle university degree

The first cycle university degree consists of at least 180 credits (three years of full-time study). The degree is called *kandidaatti/kandidat* in all fields of study except for Law (*oikeusnotaari/rättsnotarie*) and Pharmacy (*farmaseutti/farmaceut*). The determined English translation for all of these degrees is Bachelor's degree, the most common degree titles being Bachelor of Arts and Bachelor of Science.

Studies leading to the degree provide the student with: (1) knowledge of the fundamentals of the major and minor subjects or corresponding study entities or studies included in the degree programme and the prerequisites for following developments in the field, (2) knowledge and skills needed for scientific thinking and the use of scientific methods or knowledge and skills needed for artistic work, (3) knowledge and skills needed for studies leading to a higher university degree and for life-long learning, (4) a capacity for applying the acquired knowledge and skills to work and in international co-operation, and (5) adequate language and communication skills for working in one's own field and for international work and co-operation.

Studies leading to the degree may include: basic and intermediate studies; language and communication studies, interdisciplinary programmes, and other studies and work practice for professional development. The degree includes a Bachelor's thesis (6 – 10 credits).

## 8.1.2. Second cycle university degree

The second cycle university degree consists of at least 120 credits (two years of full-time study). The degree is usually called *maisteri/magister*. Other second cycle degree titles are *diplomi-insinööri/diplomingenjör* (Technology), *proviisori/provisor* (Pharmacy) and *arkkitehti/arkitekt* (Architecture). The determined English translation for all these degrees is Master's degree, the most common degree titles being Master of Arts and Master of Science. The second cycle university degree title in the fields of Medicine, Veterinary Medicine and Dentistry is *lisensiaatti/licentiat*, the English title being Licentiate. The admission requirement for the second cycle university degree is a first cycle degree.

In the fields of Medicine and Dentistry the university may arrange the education leading to the second cycle university degree without including a first cycle university degree in the education. In Medicine the degree consists of 360 credits (six years of full-time study) and in Dentistry the degree consists of 330 credits (five and a half years of full-time study).

Studies leading to the second cycle university degree provide the student with: (1) good overall knowledge of the major subject or a corresponding entity and conversance with the fundamentals of the minor subject or good knowledge of the advanced studies included in the degree programme; (2) knowledge and skills needed to apply scientific knowledge and scientific methods or knowledge and skills needed for independent and demanding artistic work; (3) knowledge and skills needed for independently operating as an expert and developer of the field and for international co-operation; (4) knowledge and skills needed for scientific or artistic postgraduate education and for life-long learning; and (5) good language and communication skills for working in one's own field and for international work and co-operation.

The studies leading to the second cycle university degree may include: basic and intermediate studies and advanced studies, language and communication studies; interdisciplinary studies, other studies, and internship improving expertise. The degree includes a Master's thesis (20 – 40 credits).

## 8.2. Doctoral degrees

Students can apply for doctoral studies after the completion of a second cycle degree. The aim of doctoral studies is to provide student with an in-depth knowledge of their field of research and capabilities to produce novel scientific knowledge independently.

The degree of *lisensiaatti/licentiat* (Licentiate) may be taken before the Doctor's degree and in general it takes two years of full-time study to complete.

The Doctor's degree takes approximately four years to complete after a second cycle degree and two years when completed after a Licentiate's degree. A student who has been admitted to complete the Doctor's degree must complete a given amount of studies, show independent and critical thinking in the field of research and write a Doctor's dissertation and defend it in public.

## 8.3. University of applied sciences degrees

The Universities of Applied Sciences Act (932/2014 including amendments) defines the objectives, extent and overall structure of universities of applied sciences degrees. The universities of applied sciences decide on the detailed contents and structure of the degrees they award. They also decide on their curricula and forms of instruction.



## 8.3.1. First cycle university of applied sciences degrees

The first cycle university of applied sciences degree consists of 180, 210, 240 or 270 credits (three to four and a half years of full-time study) depending on the field of study. The first cycle university of applied sciences degree is called *ammattikorkeakoulututkinto/yrkeshögskoleexamen*. The determined English translation for the degree is Bachelor's degree. The degree titles indicate the field of study, e.g. Bachelor of Engineering and Bachelor of Health Care.

Studies leading to the degree provide the student with: (1) broad overall knowledge and skills with relevant theoretical background for working as expert of the field, (2) knowledge and skills needed for following and advancing developments in the field, (3) knowledge and skills needed for professional development and life-long learning, and (4) adequate language and communication skills for working in one's own field and for international work and co-operation.

The first cycle university of applied sciences degree comprises basic and professional studies, elective studies, a practical training period, and a final project.

## 8.3.2. The second cycle university of applied sciences degrees

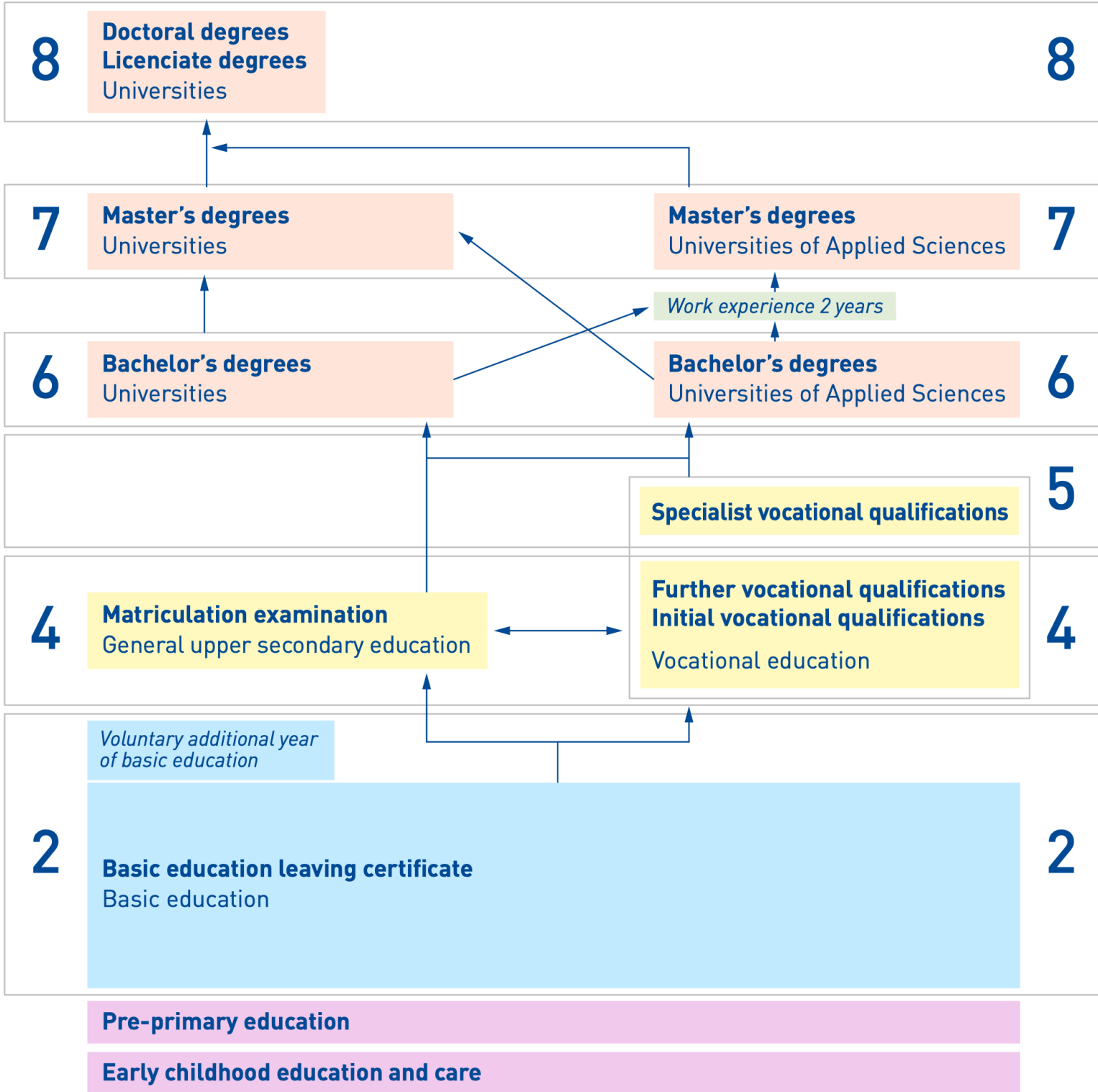
The second cycle university of applied sciences degree consists of 60 or 90 credits (a year or a year and a half of full-time study). The degree is called *ylempi ammattikorkeakoulututkinto/högre yrkeshögskoleexamen*. The determined English translation for the degree is Master's degree. The degree titles indicate the field of study, e.g. Master of Culture and Arts or Master of Business Administration. Eligibility for second cycle university of applied sciences degrees is given by a relevant first cycle degree together with at least three years of relevant work or artistic experience.

Studies leading to the degree provide the student with: (1) broad and advanced knowledge and skills for developing the professional field as well as the theoretical skills for working in demanding expert and leadership positions in the field, (2) profound understanding of the field, its relation to working life and society at large as well as the knowledge and skills needed for following and analysing both theoretical and professional developments in the field, (3) capacity for life-long learning and continuous development of one's own expertise, and (4) good language and communication skills for working in one's own field and for international work and co-operation.

The second cycle university of applied sciences degree comprises advanced professional studies, elective studies, and a final project.

# EDUCATION SYSTEM IN FINLAND

Finnish national qualifications framework levels



FINNISH NATIONAL  
AGENCY FOR EDUCATION

[www.oph.fi](http://www.oph.fi)



## Information about the (Europass) Diploma Supplement

The Europass Diploma Supplement is an appendix to higher education diplomas for use in international contexts. It includes additional information about the qualification completed for purposes such as employment and further studies. In Finland, all higher education institutions issue Diploma Supplements automatically to all graduates.

The Europass Diploma Supplement includes additional information about your studies and qualification, the level of your qualification and the competence that it provides to access further study and employment. It also provides information about the higher education institution that awarded the qualification and the education system in the country where it was awarded.

The Europass Diploma Supplement is a document developed jointly by the EU, the Council of Europe and UNESCO. The Europass Diploma Supplement is a personal document and it is not a substitute for the original diploma: it is always presented in parallel with the original diploma.

Further information is available from your higher education institution and on the Europass website at: [www.europass.fi](http://www.europass.fi)

### Recognition of Finnish qualifications abroad

The international principle for recognition of qualifications is that the receiving party makes an interpretation of the level of a foreign qualification and the qualifications that it provides. The Diploma Supplement does not automatically guarantee recognition of the qualification, but it helps by providing additional information about the qualification.

Finns leaving for another country in search of work are advised to check in advance with the target country's authorities about the qualifications recognition procedures in place in that country and the types of documents that they will require.

### Other Europass documents

Europass is a portfolio of documents open to anyone who needs a structured way of diversely presenting their skills and competences. Europass supports internationalisation and mobility both at home and abroad.

Europass consists of different documents that user is able to compile into an entity that serves his or her needs best. When you need an electronic portfolio of your skills, you can use the European Skills Passport that is a part of the Europass.

Europass consists of e.g. the following documents:

- Europass CV
- Europass Language Passport
- Europass Certificate Supplement
- Europass Diploma Supplement
- Europass Mobility

### Further information and documentation:

Finnish National Europass Centre  
Finnish National Agency for Education  
[www.europass.fi](http://www.europass.fi)