



TUTKINTOTODISTUS

Bhagya Madurangi Collas
140298-736N

on suorittanut Bachelor's Degree Programme in Information and
Communications Technology -tutkinto-ohjelmassa
Tekniikan ammattikorkeakoulututkinnon

ja voi käyttää nimikettä

INSINÖÖRI (AMK)

Tutkinnon vähimmäislaajuus on 240 opintopistettä.

Jyväskylässä 18.12.2025



A handwritten signature in blue ink, reading "Vesa Saarikoski".

Vesa Saarikoski
rehtori

Opiskelija, henkilötunnus	Bhagya Madurangi Collas, 140298-736N
OID-tunnus	1.2.246.562.24.39743268015
Tutkinto-ohjelma, laajuus	Bachelor's Degree Programme in Information and Communications Technology, 240,00 op
Opetuskieli	Englanti
Suoritetut opinnot	261,00 op
Arvosanojen keskiarvo	3,81
Arvosanojen painotettu keskiarvo	3,75

<u>Opinnot</u>	<u>Laajuus (op)</u>	<u>Arvosana</u>	<u>Päivämäärä</u>
STUDENT WELLBEING IN STUDIES AND AT WORK	5,00		
ZZPP0520 Osajana kehittyminen	5,00	H	7.11.2025
LANGUAGES AND COMMUNICATION STUDIES	11,00		
ZZPC0220 Työelämän englanti	4,00	4	31.12.2023
ZWPC0420 Communication Skills for Working Life	3,00	3	31.12.2023
ZWPC0820 Finnish 1	4,00	4	26.4.2023
FUTURE FACTORY	15,00		
ZZPP0740 JAMK InnoFlash	2,00	H	8.12.2022
ZZ00CK90 Yrittäjyys	3,00	H	9.12.2025
ZZPP0920 Future Factory -projekti	10,00	5	28.4.2025
BASIC ENGINEERING MATHEMATICS AND PHYSICS	15,00		
TZLM1300 Mat1 Yhtälöt	3,00	5	19.12.2022
TZLM2300 Mat2 Funktiot	3,00	5	7.3.2023
TZLM3300 Mat3 Derivaatta ja integraali	3,00	5	2.5.2023
TZLF1300 Fys1 Voima ja liike	3,00	5	1.5.2023
TZLF2300 Fys2 Energia	3,00	5	7.12.2023
MATEMATIIKAN JA LUONNONTIETEIDEN SOVELTAMINEN TIETO- JA VIESTINTÄTEKNIKKASSA	15,00		
TZLF8010 Fys3 - Sähkömagnetismi ja aalto-oppi	4,00	3	23.4.2025
TZLF8020 Fys4 - Laboraatiot	2,00	4	15.12.2023
TZLM4300 Mat4 Diskreetti matematiikka	3,00	5	19.12.2023
TZLM7020 Sovellettu matematiikka: Kryptologia	3,00	H	9.12.2024
TZLM7050 Sovellettu matematiikka: Vektorit ja matriisit	3,00	H	18.12.2023
SUPPORT STUDIES	7,00		
TZMV0300 Matematiikkaan valmistavat opinnot	3,00	H	24.10.2022
TZMV1100 Mat1 Tukiopinnot	1,00	H	9.12.2022
TZMV2100 Mat2 Tukiopinnot	1,00	H	7.3.2023
TZMV3100 Mat3 Tukiopinnot	1,00	H	2.5.2023
TTZW0410 Git -versionhallinta ja Gitlab -projektien hallintaympäristö	1,00	H	23.11.2022
TIC, INFORMATION TECHNOLOGY	28,00		
ZZPP0420 ICT-valmiudet	3,00	H	7.11.2022
TTC1010 IT-palvelualustat	3,00	5	11.12.2023
TTC1020 Kyberturvallisuus	4,00	2	2.5.2025
TTC1030 Tietoverkot	5,00	3	3.5.2023
TTC1040 Linuxin käyttö ja hallinta	5,00	5	2.12.2022
TTC1050 Tietorakenteet ja algoritmit	3,00	5	11.3.2025

Opiskelija, henkilötunnus Bhagya Madurangi Collas, 140298-736N
OID-tunnus 1.2.246.562.24.39743268015

Opinnot	Laajuus (op)	Arvosana	Päivämäärä
TTC1060 Digitaalitekniikka ja laitetekniikka	5,00	2	24.4.2023
TIC, SOFTWARE ENGINEERING	31,00		
TTC2010 Web-tekniikat	4,00	2	19.12.2022
TTC2020 Tietokannat	4,00 <i>h1</i>	5	28.3.2022
TTC2030 Ohjelmoinnin perusteet	5,00	5	12.12.2022
TTC2040 Johdanto IoT -järjestelmiin	3,00	3	7.12.2023
TTC2050 Johdatus data-analytiikkaan ja tekoälyyn	3,00	4	3.3.2025
TTC2060 Skriptaamisen ja automatisoinnin perusteet	3,00	5	7.12.2023
TTC2070 Projektitoiminta ja käytänteet	4,00	H	24.11.2023
TTC2080 Full Stack -ohjelmointi	5,00	4	13.12.2023
APPLICATION DEVELOPMENT	30,00		
TTC8410 Web-visualisointi	5,00	4	27.11.2024
TTC8420 Web-käyttöliittymien ohjelmointi	5,00	3	10.12.2024
TTC8430 Web-palvelinohjelmointi sovelluskehityksellä	5,00	1	1.12.2024
TTC8440 Olio-ohjelmointi	5,00	4	10.12.2024
TTC8450 Mobiilisovelluskehitys	5,00	1	10.12.2024
TTC8460 Android-sovelluskehitys	5,00	3	10.12.2024
DATA-ANALYTIKKA JA TEKÖÄLY	30,00		
TTC8010 Laskennalliset algoritmit	4,00	5	10.12.2025
TTC8020 Data analytiikan ja koneoppimisen käytänteet	4,00	4	1.12.2025
TTC8030 Datan esikäsittely	4,00	4	10.2.2025
TTC8040 Datan analysointi ja visualisointi	4,00	4	13.11.2025
TTC8050 Koneoppiminen	4,00	3	11.2.2025
TTC8060 Syväoppiminen	5,00	2	13.3.2025
TTC8070 AI / DA -Projekti	5,00	5	18.12.2025
ADVANCED PROGRAMMING	5,00		
TTC8850 Future IoT Technologies	5,00	1	20.12.2024
RESEARCH-BASED DEVELOPMENT IN PRACTICE	20,00		
ZZPP0620 Kehittämis- ja tutkimustoiminta	5,00	5	16.12.2024
ZZ00BL91 Opinnäytetyön suunnitelma, AMK	3,00	4	21.8.2025
ZZ00BL97 Opinnäytetyön kirjoittaminen, AMK	2,00	H	8.12.2025
ZZ00BL92 Opinnäytetyön toteutus, AMK	6,00	4	1.12.2025
ZZ00BL93 Opinnäytetyön raportointi ja arviointi, AMK	4,00	4	11.12.2025
ZZOA0220 Kypsyysnäyte	<i>v1</i>		11.12.2025
PRACTICAL TRAINING	42,00		
TTHA0100 Harjoittelu	18,00	H	8.8.2025
TTHA0120 Syventävä ammatillinen harjoittelu	12,00	H	13.11.2025
Harjoittelu osa 1	12,00 <i>h2</i>	H	7.3.2025

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Opinnot	Laajuus (op)	Arvosana	Päivämäärä
ELECTIVE STUDIES	7,00		
Talent Boost: Integration into Finland	2,00		
ZW00BS75 Integration into the Finnish Society	2,00	H	6.1.2023
Team&Client Project Course, Teaching	5,00 h3	H	8.5.2023

Opinnäytetyö

Opinnäytetyön nimi: Mathematical Approaches to Software Performance, Mathematical Models for System Evaluation and Enhancement

Arvosana: 4

Arviointipäivämäärä: 11.12.2025

Hyväksilukeminen

h1 = Tietokannat, 28.3.2022, Jyväskylän ammattikorkeakoulu

h2 = Harjoittelu osa 1, 7.3.2025, Muodollisen koulutuksen ulkopuolella

h3 = Team&Client Project Course, Teaching, 8.5.2023, Jyväskylän yliopisto

Vapautukset

v1 = Erityinen syy

SÄÄDÖKSET

Koulutusta säätelevät ammattikorkeakoululaki (932/2014) ja asetus ammattikorkeakouluista (1129/2014).

Opintojen mitoituksen peruste on opintopiste (op). Yhden lukuvuoden opintojen suorittamiseen keskimäärin vaadittava 1600 tunnin työpanos vastaa 60 opintopistettä. (A 1129/2014 § 3.).

Opiskelija on saanut koulusivistyksensä ulkomailla tai muulla kuin suomen tai ruotsin kielellä ja hänet on vapautettu opinnäytetyöhön sisältyvästä kypsyysnäytteestä. Opiskelija on koulusivistyksensä vuoksi vapautettu asetuksen (1129/2014, 7 §) mukaisista ruotsin kieltä koskevista kielitaitovaatimuksista. Ammattikorkeakouluasetuksessa (1129/2014, 7 §) säädetty vieraan kielen taito on osoitettu englannin kielessä.

Jyväskylässä 18.12.2025

Ufccc+hs2



Vesa Saarikoski
rehtori



DEGREE CERTIFICATE

Bhagya Madurangi Collas
140298-736N

has completed the
Bachelor's Degree Programme in Information and Communications
Technology

and is therefore entitled to use the title

BACHELOR OF ENGINEERING

The minimum number of credits required for the degree is 240.

Jyväskylä 18.12.2025



A handwritten signature in blue ink, reading "Vesa Saarikoski".

Vesa Saarikoski
rector

This document is electronically signed. The authenticity of the document can be verified from the original file and at www.jamk.fi/verification or at the website of Digital and population data services agency <https://dvv.fineid.fi/validation>

Student, Personal Identity Code	Bhagya Madurangi Collas, 140298-736N
OID	1.2.246.562.24.39743268015
Degree Programme, credits	Bachelor's Degree Programme in Information and Communications Technology, 240,00 cr
Language of Instruction	English
Completed	261,00 cr
Average grade of completed courses	3,81
Weighted average grade of completed courses	3,75

<u>Studies</u>	<u>Credits</u>	<u>Grade</u>	<u>Date</u>
STUDENT WELLBEING IN STUDIES AND AT WORK	5,00		
ZZPP0520 Development as an Expert	5,00	P	7.11.2025
LANGUAGES AND COMMUNICATION STUDIES	11,00		
ZZPC0220 English for Working Life	4,00	4	31.12.2023
ZWPC0420 Communication Skills for Working Life	3,00	3	31.12.2023
ZWPC0820 Finnish 1	4,00	4	26.4.2023
FUTURE FACTORY	15,00		
ZZPP0740 JAMK InnoFlash	2,00	P	8.12.2022
ZZ00CK90 Entrepreneurship	3,00	P	9.12.2025
ZZPP0920 Future Factory Project	10,00	5	28.4.2025
BASIC ENGINEERING MATHEMATICS AND PHYSICS	15,00		
TZLM1300 Math1 Equations	3,00	5	19.12.2022
TZLM2300 Math2 Functions	3,00	5	7.3.2023
TZLM3300 Math3 Derivative and Integral	3,00	5	2.5.2023
TZLF1300 Phys1 Force and Motion	3,00	5	1.5.2023
TZLF2300 Phys2 Energy	3,00	5	7.12.2023
MATHEMATICS AND APPLYING OF NATURAL SCIENCES IN INFORMATION AND COMMUNICATION TECHNOLOGY	15,00		
TZLF8010 Physics 3 - Electromagnetism and Waves	4,00	3	23.4.2025
TZLF8020 Physics 4 - Laboratory work	2,00	4	15.12.2023
TZLM4300 Math4 Discrete Mathematics	3,00	5	19.12.2023
TZLM7020 Applied mathematics: Cryptology	3,00	P	9.12.2024
TZLM7050 Applied mathematics: Vectors and Matrices	3,00	P	18.12.2023
SUPPORT STUDIES	7,00		
TZMV0300 Preparatory Mathematics	3,00	P	24.10.2022
TZMV1100 Math1 Support	1,00	P	9.12.2022
TZMV2100 Math2 Support	1,00	P	7.3.2023
TZMV3100 Math3 Support	1,00	P	2.5.2023
TTZW0410 Git -version control and Gitlab -project management environment	1,00	P	23.11.2022
TIC, INFORMATION TECHNOLOGY	28,00		
ZZPP0420 ICT Skills	3,00	P	7.11.2022
TTC1010 IT Service Platforms	3,00	5	11.12.2023
TTC1020 Cyber Security	4,00	2	2.5.2025
TTC1030 Data Networks	5,00	3	3.5.2023
TTC1040 Linux Basics	5,00	5	2.12.2022

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<u>Studies</u>	<u>Credits</u>	<u>Grade</u>	<u>Date</u>
TTC1050 Data Structures and Algorithms	3,00	5	11.3.2025
TTC1060 Digital Technology and Hardware	5,00	2	24.4.2023
TIC, SOFTWARE ENGINEERING	31,00		
TTC2010 Web Technologies	4,00	2	19.12.2022
TTC2020 Databases	4,00 <i>h1</i>	5	28.3.2022
TTC2030 Basics of Programming	5,00	5	12.12.2022
TTC2040 Introduction to IoT-systems	3,00	3	7.12.2023
TTC2050 Introduction to Data Analytics and Artificial Intelligence	3,00	4	3.3.2025
TTC2060 Basics of Scripting and Automatization	3,00	5	7.12.2023
TTC2070 Project Management and Practices	4,00	P	24.11.2023
TTC2080 Full Stack Programming	5,00	4	13.12.2023
APPLICATION DEVELOPMENT	30,00		
TTC8410 Web Visualization	5,00	4	27.11.2024
TTC8420 Web User Interface Programming	5,00	3	10.12.2024
TTC8430 Web Server Programming	5,00	1	1.12.2024
TTC8440 Object-oriented Programming	5,00	4	10.12.2024
TTC8450 Mobile Application Development	5,00	1	10.12.2024
TTC8460 Android Application Development	5,00	3	10.12.2024
DATA-ANALYTICS AND ARTIFICIAL INTELLIGENCE	30,00		
TTC8010 Computational algorithms	4,00	5	10.12.2025
TTC8020 Data-Analysis and Machine Learning Basics	4,00	4	1.12.2025
TTC8030 Data Preprocessing	4,00	4	10.2.2025
TTC8040 Data Analysis and Visualization	4,00	4	13.11.2025
TTC8050 Machine Learning	4,00	3	11.2.2025
TTC8060 Deep Learning	5,00	2	13.3.2025
TTC8070 AI / DA -Project	5,00	5	18.12.2025
ADVANCED PROGRAMMING	5,00		
TTC8850 Future IoT Technologies	5,00	1	20.12.2024
RESEARCH-BASED DEVELOPMENT IN PRACTICE	20,00		
ZZPP0620 Research and Development	5,00	5	16.12.2024
ZZ00BL91 Bachelor's Thesis, Planning	3,00	4	21.8.2025
ZZ00BL97 Bachelor's Thesis, Thesis Writing	2,00	P	8.12.2025
ZZ00BL92 Bachelor's Thesis, Implementation	6,00	4	1.12.2025
ZZ00BL93 Bachelor's Thesis, Reporting and Assessment	4,00	4	11.12.2025
ZZOA0220 Maturity Test	<i>v1</i>		11.12.2025
PRACTICAL TRAINING	42,00		
TTHA0100 Practical Training	18,00	P	8.8.2025
TTHA0120 Advancement Professional Training	12,00	P	13.11.2025
Practical Training Part 1	12,00 <i>h2</i>	P	7.3.2025

Student, Personal Identity Code Bhagya Madurangi Collas, 140298-736N
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<u>Studies</u>	<u>Credits</u>	<u>Grade</u>	<u>Date</u>
ELECTIVE STUDIES	7,00		
Talent Boost: Integration into Finland	2,00		
ZW00BS75 Integration into the Finnish Society	2,00	P	6.1.2023
Team&Client Project Course, Teaching	5,00 <i>h3</i>	P	8.5.2023

Thesis

Thesis name: Mathematical Approaches to Software Performance, Mathematical Models for System Evaluation and Enhancement

Grade: 4

Assessment date: 11.12.2025

Recognition of Studies

h1 = Databases, 28.3.2022, JAMK University of Applied Sciences

h2 = Practical Training Part 1, 7.3.2025, Outside of Formal Education

h3 = Team&Client Project Course, Teaching, 8.5.2023, University of Jyväskylä

Exemptions

v1 = Special reason

REGULATIONS

The education is regulated by the Act 932/2014 and Government Decree 1129/2014.

The studies are measured in credits (cr). A student's average study effort of 1,600 hours required for the completion of studies during one academic year corresponds to 60 credits. (Decree 1129/2014 § 3.) The Finnish credits are equivalent to the ECTS credits.

The Finnish grades are converted to ECTS grades as follows (ECTS grades in brackets): 5 (A), 4 (B), 3 (C), 2 (D), 1 (E), 0/fail (F or FX).

The student has received their school education abroad or in other than Finnish or Swedish language and has been exempted from the maturity test of Bachelor's Thesis. The student has been exempted from the language requirement in the Swedish language as stipulated by the Decree 1129/2014, 7§ due to the language of their school education. The foreign language proficiency decreed in the Government Decree on Polytechnics (1129/2014, 7 §) has been demonstrated in English.

Jyväskylä 18.12.2025



Vesa Saarikoski
rector

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)	<i>Collas</i>
1.2	First name(s)	<i>Bhagya Madurangi</i>
1.3	Date of birth	<i>14.2.1998</i>
1.4	Student identification number	<i>OID: 1.2.246.562.24.39743268015 2209882</i>

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1	Name of qualification and title conferred	<i>Tekniikan ammattikorkeakoulututkinto Insinööri (AMK) Bachelor of Engineering</i>
2.2	Main field(s) of study for the qualification	<i>Information and communication technologies Bachelor's Degree Programme in Information and Communications Technology</i>
2.3	Name and status of awarding institution	<i>Jyväskylän ammattikorkeakoulu (Jamk University of Applied Sciences), state recognised university of applied sciences, formerly Jyväskylä University of Applied Sciences, formerly Jyväskylä Polytechnic.</i>
2.4	Name and status of institution administering studies	<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>First-cycle higher education degree (bachelor level)</i> <i>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	<i>The degree consists of 240 credits (4 years of full-time study). The Finnish credits are fully compatible with the ECTS credits.</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 qualification, further vocational qualifications and special vocational qualifications. Foreign qualifications which in the awarding country give eligibility for higher education studies, give general eligibility for higher education also in Finland.</i> <i>There is 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 outcomes	<p><i>Studies leading to the degree provide the student with:</i></p> <p><i>(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,</i></p> <p><i>(2) knowledge and skills needed for scientific thinking and the use of scientific methods or knowledge and skills needed for artistic work,</i></p> <p><i>(3) knowledge and skills needed for studies leading to a higher university degree and for life-long learning,</i></p> <p><i>(4) a capacity for applying the acquired knowledge and skills to work and in international co-operation, and</i></p> <p><i>(5) adequate language and communication skills for working in one's own field and for international work and co-operation.</i></p> <p><i>See 8.</i></p> <p><i>Studies leading to a first-cycle university of applied sciences degree comprise:</i></p> <p><i>1) basic and professional studies;</i></p> <p><i>2) optional studies;</i></p> <p><i>3) practical training</i></p> <p><i>4) a Bachelor's thesis 15 credits</i></p> <p><i>See Transcript of Records.</i></p>
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	<p><i>5 = Excellent</i></p> <p><i>4 = Very good</i></p> <p><i>3 = Good</i></p> <p><i>2 = Satisfactory</i></p> <p><i>1 = Sufficient</i></p> <p><i>P = Pass</i></p> <p><i>0 = Fail</i></p>
4.5	Overall classification of the qualification	<p><i>See Transcript of Records</i></p> <p><i>Not applicable</i></p>

5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1	Access to further study	<i>Eligible for second cycle higher education studies. The admission decisions are made in the receiving higher education institution.</i>
5.2	Access to a regulated profession	<i>Under the Finnish legislation, a person who has taken Bachelor of Engineering is qualified for posts or positions in the public sector for which the qualification requirement is a first-cycle higher education degree.</i>

6 ADDITIONAL INFORMATION

6.1 Additional information

*Jyväskylän ammattikorkeakoulu
Jamk University of Applied Sciences
P.O. Box 207
FI-40101 JYVÄSKYLÄ, Finland
Tel. +358 (0) 20743 8100
www.jamk.fi*

6.2 Further information sources

- www.jamk.fi Jyväskylän ammattikorkeakoulu, Jamk University of Applied Sciences

- www.minedu.fi, Ministry of Education and Culture

- www.oph.fi/en/services/recognition-and-international-comparability-qualifications,

- www.oph.fi/en/education-and-qualifications/qualifications-frameworks,
The Finnish National Agency for Education, (The National Academic Recognition Information Centre (NARIC), the National Coordination Point for the European Qualifications Framework (EQF)

- www.karvi.fi, Finnish Education Evaluation Centre

7 CERTIFICATION OF THE SUPPLEMENT

7.1 Date

Jyväskylä, 18.12.2025

7.2 Signature

Vesa Saarikoski



*Vesa Saarikoski
rector*

7.3 Capacity

7.4 Official stamp or seal

8 INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

The Finnish education system consists of pre-primary and basic education, general and vocational education and higher 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 consists of general and vocational upper secondary education that lead to the national Matriculation Examination (ylioppilastutkinto/studentexamen), vocational upper secondary qualification (ammattillinen perustutkinto/yrkesinriktad grundexamen), further vocational qualification (ammattitutkinto, yrkesexamen) and specialist vocational qualification (erikoisammattitutkinto/specialyrkesexamen).

Higher education system 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 workload 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).

Higher education qualifications in Finland are referenced at levels 6, 7 and 8 both in the National Qualifications Framework as well as in the European Qualifications Framework.

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.

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).

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-insinöörin tutkinto/diplomingenjörexamen (Technology), proviisorin tutkinto /provisorexamen (Pharmacy), arkkitehdin tutkinto/arkitektexamen (Architecture) and maisema-arkkitehdin tutkinto/ landskapsarkitektexamen Landscape 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).

Doctoral degrees

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 studies leading to Doctor's degree must complete a given amount of studies, show independent and critical thinking in their field of research and write a Doctor's dissertation and defend it in public.

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.

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.

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 Master of Police Services degree consists of 120 credits. 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.

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.

Professional specialisation programmes

Universities and universities of applied sciences offer professional specialisation programmes for those who have completed a degree and have already entered working life. Professional specialisation programmes aim to promote professional development and specialisation by means of providing education based on the research.

Provisions on the joint objectives and minimum scope of professional specialisation programmes are issued by government decree. The minimum scope of professional specialisation studies is 30 credits.