Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences

Degree Certificate

no. 2104210

Jingjing Yang
030891-280W

has completed a bachelor's degree in the Bachelor's Degree Programme in Software Engineering in accordance with the Universities of Applied Sciences Act (932/2014) and Government Decree on Polytechnics (1129/2014).

The extent of the degree is 240 credits.
The graduate is entitled to use the degree title

Bachelor of Engineering

A transcript of records including the completed studies and grades is enclosed.

Tampere 30.5.2025

This certificate is digitally signed by
Mika Hannula
President

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences

Tutkintotodistus

nro 2104210

Jingjing Yang
030891-280W

on suorittanut ammattikorkeakoululain (932/2014) ja ammattikorkeakouluasetuksen (1129/2014) mukaisen tekniikan ammattikorkeakoulututkinnon Bachelor's Degree Programme in Software Engineering tutkinto-ohjelmassa.

Tutkinnon laajuus on 240 opintopistettä,
ja tutkinnon suorittanut on oikeutettu käyttämään tutkintonimikettä

Insinööri (AMK)

Suoritetut opinnot arvosanoineen ilmenevät tämän todistuksen liitteestä.

Tampereella 30.5.2025

Todistuksen on sähköisesti allekirjoittanut
Mika Hannula
rehtori

Opiskelija	Jingjing Yang	01.08.2021–30.05.2025	
Henkilötunnus	030891-280W	Valmistunut	
Opiskelijanumero	2104210	Laajuus	**240 op**
Ohjelma	Bachelor's Degree Programme in Software Engineering	Suoritettu	**242 op**
Opetuskieli	englanti	Painotettu keskiarvo	**4,88**

Opinnot	Laajuus		Arviointi	Pvm
Engineering Mathematics and Science	**25 op**			
Mechanics and Thermophysics	5 op		5	17.12.2021
Electromagnetism, Waves and Atomic Physics	5 op		5	18.12.2021
Physics Laboratory Works	3 op		5	09.05.2022
Basics of Measuring and Reporting in ICT Engineering	2 op		5	18.02.2022
Mathematics 1	5 op		5	09.01.2022
Mathematics 2	5 op		5	02.05.2022
ICT Engineering	**35 op**			
Embedded Systems	10 op		4	10.05.2022
Embedded Projects 1	5 op		5	13.01.2023
Embedded Projects 2	5 op		5	10.05.2023
Network Technologies	5 op		5	02.01.2023
Server Technologies	10 op		5	31.05.2023
Communication and Language Studies	**12 op**			
Orientation to ICT Engineering Studies	3 op		5	14.10.2021
English for ICT Engineering Students	3 op		5	12.01.2022
Language Studies	**6 op**			
Finnish I / Swedish I	3 op	*s1*	4	20.09.2021
Finnish II / Swedish II	3 op	*s2*	4	20.09.2021
Software Engineering	**110 op**			
Programming Languages	**15 op**			
Programming Languages 1	5 op		5	07.01.2022
Programming Languages 2	5 op		5	16.05.2022
Programming Languages 3	5 op		5	14.12.2022
Device Oriented Programming	**15 op**			
Mobile App Development 1	5 op		5	29.05.2023
Mobile App Development 2	5 op		5	09.01.2024
Operating System Concepts and Linux System Programming	5 op		5	26.04.2024
Software Architectures and Engineering	**10 op**			
Software Architectures and Design	5 op		5	21.12.2023
Software Implementation and Testing	5 op		5	08.04.2024
Data Analytics and Machine Learning	**20 op**			
Data Systems and Analysis	5 op		5	12.12.2022
Data Analysis and Visualization	7 op		5	28.04.2023
AI and Machine Learning	8 op		4	17.12.2023
Web Development	**25 op**			
Basics of Web Development	5 op		5	26.05.2022
Web Software Production	5 op		5	13.01.2023
Full Stack Web Development	10 op		5	19.01.2024
API Service Development	5 op		5	22.11.2024

Opiskelija Jingjing Yang
Opiskelijanumero 2104210

Graphical User Interfaces and Usability	**10 op**			
Software Requirements and Application Prototyping	5 op		5	18.12.2023
Graphical User Interfaces	5 op		5	16.05.2024
Software Projects	**15 op**			
Software Project	5 op		5	11.12.2024
Professional Software Development	10 op		5	21.05.2024
Free-Choice Studies (MAX 15 ECTS)	**15 op**			
English in Global Context	3 op	*s3*	5	20.09.2021
Organizational Communication	4 op	*s4*	5	20.09.2021
Negotiations	2 op	*s5*	4	20.09.2021
Research Writing Skills	3 op	*s6*	5	20.09.2021
Business Mathematics	3 op	*s7*	5	20.09.2021
Practical Training	**30 op**			
Practical Training 1	6 op	*k1*	S	20.09.2021
Practical Training 2	12 op		S	15.10.2024
Practical Training 3	12 op		S	15.10.2024
Bachelor's Thesis	**15 op**			
Opinnäytetyön suunnittelu	5 op		5	07.04.2025
Opinnäytetyön toteutus	5 op		5	07.04.2025
Opinnäytetyön raportointi	5 op		5	15.05.2025

Opinnäytetyö: Development of Non-Invasive Glucose Monitoring System
Integration of Spectroscopy, IoT, and Machine Learning for Real-Time Heath Insight
Arviointi: 5
Arviointipäivämäärä: 14.05.2025

Korvaavat suoritukset

k1 = Aiemmat korkeakouluopinnot, 26.10.2020, Hämeen ammattikorkeakoulu

Sisältyvyydet

s1 = 03.12.2017, Hämeen ammattikorkeakoulu
s2 = 06.04.2018, Hämeen ammattikorkeakoulu
s3 = 30.12.2017, Hämeen ammattikorkeakoulu
s4 = 19.04.2018, Hämeen ammattikorkeakoulu
s5 = 22.05.2018, Hämeen ammattikorkeakoulu
s6 = 20.12.2019, Hämeen ammattikorkeakoulu
s7 = 07.11.2017, Hämeen ammattikorkeakoulu

Tutkinnon suorittanut on vapautettu ammattikorkeakouluasetuksen (1129/2014, 7 §) mukaisista ruotsin kieltä koskevista kielitaitovaatimuksista. Tutkinnon suorittanut on kirjoittanut opinnäytetyöhön sisältyvän kypsyysnäytteen suomen kielellä. Ammattikorkeakouluasetuksessa (1129/2014, 7 §) säädetty vieraan kielen taito on osoitettu englannin kielessä.

Opinnot on suoritettu englannin kielellä.

Opiskelija Jingjing Yang
Opiskelijanumero 2104210

Rehtori on sähköisesti hyväksynyt tutkintotodistuksen liitteen.

Mika Hannula
rehtori

Student	Jingjing Yang	01.08.2021–30.05.2025	
Personal identity code	030891-280W	Graduated	
Student number	2104210	Credits	**240 cr**
Programme	Bachelor's Degree Programme in Software Engineering	Completed	**242 cr**
Language of instruction	English	Weighted average	**4,88**

Studies	Credits		Assessment	Date
Engineering Mathematics and Science	**25 cr**			
Mechanics and Thermophysics	5 cr		5	17.12.2021
Electromagnetism, Waves and Atomic Physics	5 cr		5	18.12.2021
Physics Laboratory Works	3 cr		5	09.05.2022
Basics of Measuring and Reporting in ICT Engineering	2 cr		5	18.02.2022
Mathematics 1	5 cr		5	09.01.2022
Mathematics 2	5 cr		5	02.05.2022
ICT Engineering	**35 cr**			
Embedded Systems	10 cr		4	10.05.2022
Embedded Projects 1	5 cr		5	13.01.2023
Embedded Projects 2	5 cr		5	10.05.2023
Network Technologies	5 cr		5	02.01.2023
Server Technologies	10 cr		5	31.05.2023
Communication and Language Studies	**12 cr**			
Orientation to ICT Engineering Studies	3 cr		5	14.10.2021
English for ICT Engineering Students	3 cr		5	12.01.2022
Language Studies	**6 cr**			
Finnish I / Swedish I	3 cr	*s1*	4	20.09.2021
Finnish II / Swedish II	3 cr	*s2*	4	20.09.2021
Software Engineering	**110 cr**			
Programming Languages	**15 cr**			
Programming Languages 1	5 cr		5	07.01.2022
Programming Languages 2	5 cr		5	16.05.2022
Programming Languages 3	5 cr		5	14.12.2022
Device Oriented Programming	**15 cr**			
Mobile App Development 1	5 cr		5	29.05.2023
Mobile App Development 2	5 cr		5	09.01.2024
Operating System Concepts and Linux System Programming	5 cr		5	26.04.2024
Software Architectures and Engineering	**10 cr**			
Software Architectures and Design	5 cr		5	21.12.2023
Software Implementation and Testing	5 cr		5	08.04.2024
Data Analytics and Machine Learning	**20 cr**			
Data Systems and Analysis	5 cr		5	12.12.2022
Data Analysis and Visualization	7 cr		5	28.04.2023
AI and Machine Learning	8 cr		4	17.12.2023
Web Development	**25 cr**			
Basics of Web Development	5 cr		5	26.05.2022
Web Software Production	5 cr		5	13.01.2023
Full Stack Web Development	10 cr		5	19.01.2024
API Service Development	5 cr		5	22.11.2024

Student Jingjing Yang
Student number 2104210

Graphical User Interfaces and Usability	**10 cr**			
Software Requirements and Application Prototyping	5 cr		5	18.12.2023
Graphical User Interfaces	5 cr		5	16.05.2024
Software Projects	**15 cr**			
Software Project	5 cr		5	11.12.2024
Professional Software Development	10 cr		5	21.05.2024
Free-Choice Studies (MAX 15 ECTS)	**15 cr**			
English in Global Context	3 cr	*s3*	5	20.09.2021
Organizational Communication	4 cr	*s4*	5	20.09.2021
Negotiations	2 cr	*s5*	4	20.09.2021
Research Writing Skills	3 cr	*s6*	5	20.09.2021
Business Mathematics	3 cr	*s7*	5	20.09.2021
Practical Training	**30 cr**			
Practical Training 1	6 cr	*k1*	S	20.09.2021
Practical Training 2	12 cr		S	15.10.2024
Practical Training 3	12 cr		S	15.10.2024
Bachelor's Thesis	**15 cr**			
Thesis Plan	5 cr		5	07.04.2025
Implementing Thesis	5 cr		5	07.04.2025
Reporting Thesis	5 cr		5	15.05.2025

Bachelor's Thesis Title: Development of Non-Invasive Glucose Monitoring System
Integration of Spectroscopy, IoT, and Machine Learning for Real-Time Heath Insight
Assessment: 5
Assessment date: 14.05.2025

Compensated studies

k1 = Previous Higher Education Studies, 26.10.2020, HAMK University of Applied Sciences

Inclusions

s1 = 03.12.2017, HAMK University of Applied Sciences
s2 = 06.04.2018, HAMK University of Applied Sciences
s3 = 30.12.2017, HAMK University of Applied Sciences
s4 = 19.04.2018, HAMK University of Applied Sciences
s5 = 22.05.2018, HAMK University of Applied Sciences
s6 = 20.12.2019, HAMK University of Applied Sciences
s7 = 07.11.2017, HAMK University of Applied Sciences

The graduate has been exempted from the Swedish studies which are defined in the Universities of Applied Sciences Act (1129/2014, 7 §). The graduate has written the maturity test for the Bachelor's Thesis in Finnish. The foreign language proficiency decreed in Act (1129/2014, 7 §) has been demonstrated in English.

Studies have been completed in English.

Student Jingjing Yang
Student number 2104210

The Transcript of Records is digitally approved by the President.

Mika Hannula
President

DIPLOMA SUPPLEMENT

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)	*Yang*
1.2	First name(s)	*Jingjing*
1.3	Date of birth (day.month.year)	*3.8.1991*
1.4	Student identification number or code (if available)	*2104210*

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1	Name of qualification and (if applicable) title conferred (in original language)	*Tekniikan ammattikorkeakoulututkinto* *Insinööri (AMK) / Bachelor of Engineering*
2.2	Main field(s) of study for the qualification	*Bachelor's Degree Programme in Software Engineering*
2.3	Name and status of awarding institution (in original language)	*Tampereen ammattikorkeakoulu* *(Tampere University of Applied Sciences)* *State recognised university of applied sciences* *The quality assurance system of the university of applied sciences has passed the audit conducted by the Finnish Education Evaluation Centre. Further information: www.karvi.fi*
2.4	Name and status of institution (if different from 2.3) administering studies (in original language)	*Not applicable*
2.5	Language(s) of instruction/examination	*English*

3 INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1	Level of qualification	*First-cycle higher education degree (bachelor level). The degree is on level 6 in the National and the European Qualifications Framework.*
3.2	Official duration of programme in credits and/or years	*240 credits (4 years of full time study)* *Finnish credits are fully compatible with the ECTS.*
3.3	Access requirement(s)	*See 8. There is a numerus clausus, i.e. restricted entry, to all fields of study.*

4 INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1	Mode of study	*Full-time*
4.2	Programme learning outcomes	*See 8 and Transcript of Records*
4.3	Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained	*See Transcript of Records*

DIPLOMA SUPPLEMENT

4.4	Grading scheme and, if available, grade distribution guidance	*5 = Excellent* *4 = Very Good* *3 = Good* *2 = Satisfactory* *1 = Sufficient* *0 = Fail* *S = Pass*
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	*Tampereen ammattikorkeakoulu (Tampere University of Applied Sciences) has been awarded the Diploma Supplement Label. Together with Tampereen yliopisto (Tampere University), Tampereen ammattikorkeakoulu (Tampere University of Applied Sciences) constitutes the Tampere higher education community.*
6.2	Further information sources	*www.tuni.fi, Tampere 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*

DIPLOMA SUPPLEMENT

7 CERTIFICATION OF THE SUPPLEMENT

7.1	Date	*Tampere, 30.5.2025*
7.2	Signature	
		Mika Hannula
7.3	Capacity	*President*

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 (*ammatillinen 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 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).

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.

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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) and *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).

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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.

DIPLOMA SUPPLEMENT

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.