

Student	Emil [REDACTED] Pirinen	25.08.2015–31.01.2020	
Personal identity code	[REDACTED]	Graduated	
Student number	[REDACTED]	Credits	<b>240 cr</b>
Programme	Degree Programme in ICT Engineering	Completed	<b>240 cr</b>
Specialisation	Software Engineering		

Studies	Credits	Assessment	Date
<b>BASIC AND PROFESSIONAL STUDIES</b>	<b>177 cr</b>		
<b>Engineering mathematics and sciences basic studies 1</b>	<b>9 cr</b>		
Geometry and Vector Algebra	3 cr	4	08.12.2016
Functions and Matrices	3 cr	4	09.01.2017
Fluid Mechanics and Thermophysics	3 cr	3	15.12.2016
<b>Basics of ICT 1</b>	<b>19 cr</b>		
Basics of Computer Systems for Engineers	3 cr	5	18.11.2016
Programming basics	4 cr	5	02.12.2016
Engineering Finnish language and communication	3 cr	4	01.12.2016
Measurements and constructing equipment	6 cr	4	10.01.2017
DC Circuit Analysis	3 cr	3	15.12.2016
<b>Basics of ICT, 2</b>	<b>25 cr</b>		
Differential Calculus	3 cr	3	13.03.2017
Programming languages	3 cr	5	05.04.2017
Web Programming	3 cr	5	02.05.2017
Electronics	5 cr	1	16.05.2017
Digital Electronics 1	3 cr	1	30.04.2017
Telecommunication Networks and Buses	4 cr	4	27.04.2017
ICT projects	4 cr	5	19.05.2017
<b>Engineering mathematics and sciences basic studies 2</b>	<b>9 cr</b>		
Integral Calculus	3 cr	2	12.05.2017
Electrostatics and Electric Circuits, Magnetism	3 cr	3	21.12.2017
Basics of Measuring and Reporting	3 cr	4	20.12.2017
<b>Basics of ICT, 3</b>	<b>17 cr</b>		
Basics of Microcontrollers	3 cr	5	21.12.2017
Operating Systems	4 cr	4	27.01.2018
Object-Oriented Programming	4 cr	5	21.12.2017
AC Circuit Analysis	3 cr	5	15.12.2017
The use of electricity	3 cr	4	27.12.2017
<b>Engineering mathematics and sciences basic studies 3</b>	<b>12 cr</b>		
Oscillations and Wave Mechanics, Atom and Nuclear Physics	3 cr	4	22.05.2018
Laboratory Works of Physics	3 cr	4	24.04.2018
Discrete Systems	3 cr	1	19.03.2018
Statistics	3 cr	4	25.04.2018
<b>Basics of ICT, 4</b>	<b>15 cr</b>		
Basics in data communications	3 cr	2	25.04.2018
Communication protocols	3 cr	4	26.04.2018
Basics of data security	4 cr	4	25.04.2018
Laboratory Works of Electronics 1	5 cr	4	03.05.2018
<b>Business Skills</b>	<b>6 cr</b>		
Business Economics	3 cr	5	13.01.2019
Working English for Engineers	3 cr	4	05.12.2018

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<b>Entrepreneurship</b>	<b>10 cr</b>			
Contract and Management studies	3 cr	3		09.05.2019
A Fast Track to Professional English	3 cr	5		03.02.2019
Swedish Language, Written	2 cr	1		03.06.2019
Swedish Language, Spoken	2 cr	2		03.06.2019
<b>Programming Advanced Studies 1</b>	<b>20 cr</b>			
Object-Oriented Programming, advanced	3 cr	5		07.01.2020
Web programming, advanced	3 cr	5		21.01.2019
Advanced programming languages	4 cr	5		21.12.2018
Data Structures and Algorithms	5 cr	5		20.12.2018
Databases	5 cr	5		16.01.2019
<b>Programming Advanced Studies 2</b>	<b>17 cr</b>			
Software Engineering	5 cr	5		20.05.2019
Software Architectures	4 cr	4		09.12.2019
Graphical user interface programming	4 cr	5		30.04.2019
Mobile devices programming	4 cr	5		20.05.2019
<b>RDI skills (programming)</b>	<b>18 cr</b>			
Software Project Works	6 cr	5		20.12.2019
Software engineering mobile project	6 cr	5		03.01.2020
Innovation Project	6 cr	5		29.10.2019
<b>FREE-CHOICE STUDIES</b>	<b>15 cr</b>			
Elements of AI	2 cr	s1	S	16.01.2019
C# Programming	4 cr	s2	S	06.03.2019
C-Programming	3 cr	s2	S	06.03.2019
Python-Programming	3 cr	s3	S	06.03.2019
Basics of Linux	3 cr	5		10.04.2019
<b>PRACTICAL TRAINING</b>	<b>30 cr</b>			
Practical Training 1	6 cr		S	31.07.2017
Practical Training 2	12 cr		S	30.07.2018
Practical Training 3	12 cr		S	30.07.2018

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**BACHELOR'S THESIS**

**18 cr**

Technical Report and The Bachelor's Thesis	3 cr	5	15.12.2019
Bachelor's Thesis	15 cr	S	19.12.2019

**Bachelor's Thesis Title:** Browser-based Remote Management Tool Case: Sandvik Mining and Rock Technology

**Assessment:** 5

**Assessment date:** 19.12.2019

**Inclusions**

s1 = 15.1.2019, University of Helsinki  
s2 = 26.2.2019, Metropolia University of Applied Sciences  
s3 = 28.1.2019, Metropolia University of Applied Sciences

The graduate has received school education in Finnish and has written the maturity test for the Bachelor's Thesis in Finnish. The graduate has also shown satisfactory written and satisfactory oral skills in Swedish, as decreed in the Act on the Knowledge of Languages Required of Personnel in Public Bodies (424/2003, 6 §) for offices demanding a university degree in a bilingual administrative district. The foreign language proficiency decreed in the Government Decree on Polytechnics (1129/2014, 7 §) has been demonstrated in English.

Studies have been completed in Finnish.

The Transcript of Records is digitally approved by the Head of Degree Programme.

