

Master's Programme in Computer, Communication and Information Science (CCIS)

Programme info 2026

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25 August 2026



Programme info

Topics today

- Welcome words of the of CCIS Programme Director Petri Vuorimaa
- CCIS Student Services
- Degree Structure
- Personal Study Plan (HOPS)

- Questions

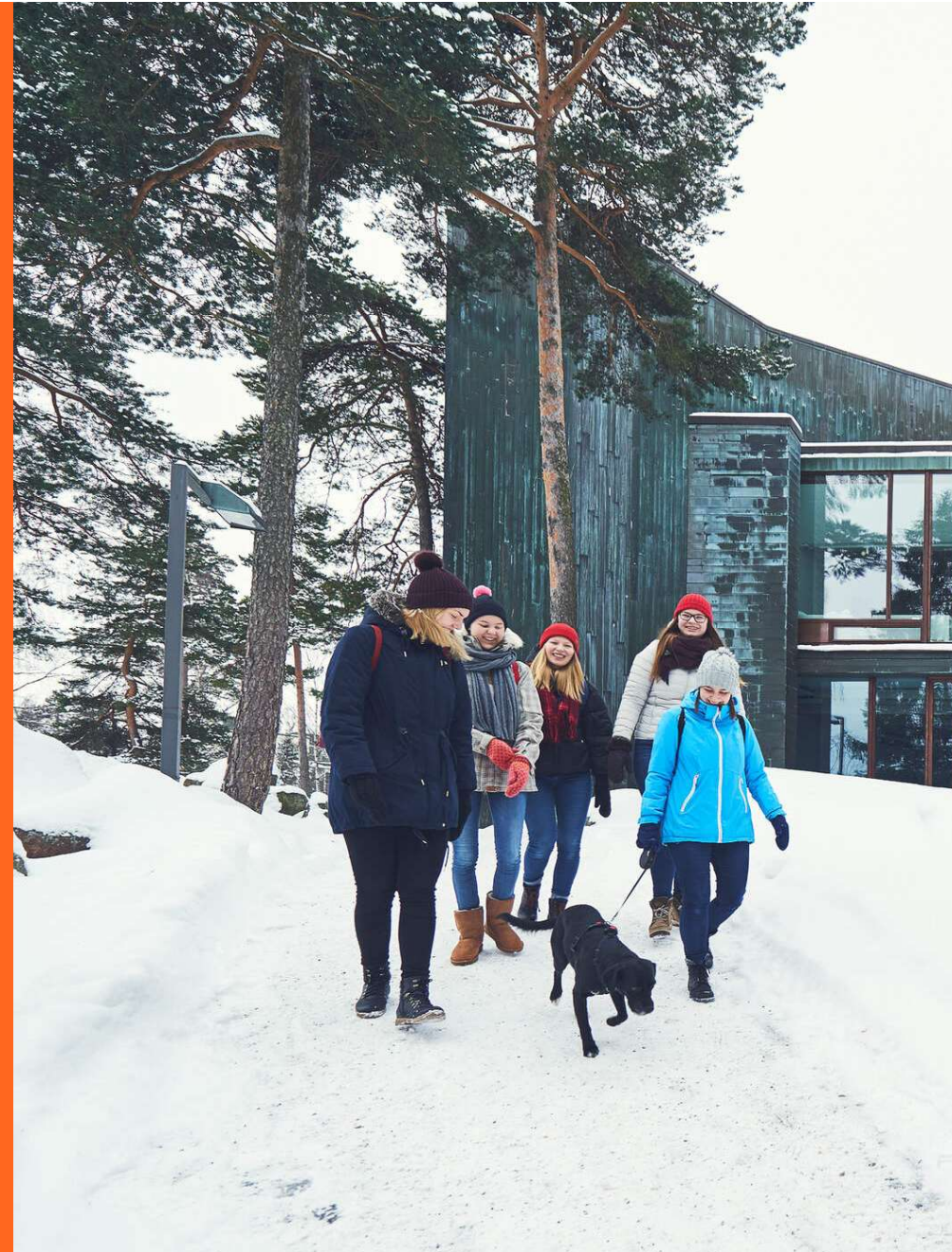
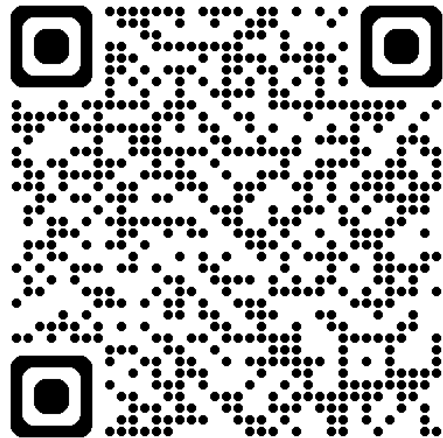
Welcome words

Director of Programme,
Petri Vuorimaa



Feel free to ask
questions in person or
in Presemo!

presemo.aalto.fi/ccisinfo



Study guidance at Aalto SCI

- **Student Services can be contacted by email or by booking a meeting in MyStudies. We speak English, Finnish (and Swedish)!**
 - sci.masters@aalto.fi
 - **Planning officer Anu Kuusela and Study Coordinator Meeri Heimo**
- **CCIS Programme contact information in Aalto.fi -> Student Guide -> Programme page -> contact**
- **Starting Point**
 - **Service desk in Undergraduate centre, room Y199a**
 - **Enrolling to semester, HSL, transcript of records, certificate of student status**
 - **studentservices@aalto.fi**

Remember to use your Aalto email and include your student number!

Update your personal information in Sisu

Keep your personal information updated during your studies!

- **Contact information**
- **Selections for disclosure of information**

If your Finnish personal identity code is not in Sisu, please contact studentservices@aalto.fi

Rules for fair play

- The Code of Conduct contains principles and fair play rules to help us make good ethical choices and clarify our compliance with the Aalto values.
- As members of Aalto, we:
 - conduct ourselves in a fair and honest manner
 - show respect to others irrespective of background
 - promote open dialogue and the free exchange of ideas
 - build mutual trust and actively seek the safety and well-being of ourselves and others
- Inappropriate conduct and harassment are not tolerated. Everyone has the right to a safe and respectful environment.
- Everyone in the Aalto community is to take the online Code of Conduct course; it provides a fuller understanding of Aalto's ethical guidelines.

Degree structure and HOPS

Master's Programme in Computer, Communication and Information Science (CCIS)

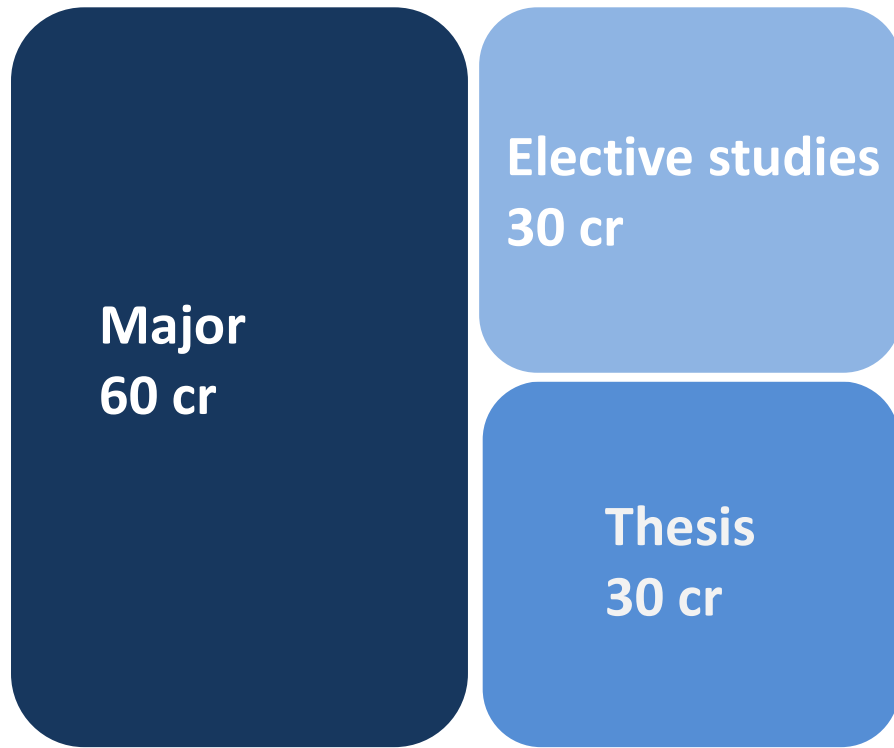
- Jointly organized by two schools: **School of Science (SCI)** and School of Electrical Engineering (ELEC)
- Always follow instructions for SCI students!
- 9 majors, of which 5 organized by SCI
- Around 80 new students in our programme (+ lots of other students who completed their BSc degree in Aalto) 

Curriculum

Aalto.fi -> Student Guide -> Programme page -> subpage *Curriculum*

- Master's programmes are planned to be completed within two years starting from the autumn semester
 - 120 ECTS in total, 60 ECTS per year
 - You have study right for four years
- Recommended study schedules are planned on this basis
 - Recommended study year/period for each compulsory course can be checked from the curriculum.
- Study schedule is also available in Sisu study calendar after enrolling to the courses.

Degree structure: Long major



Major 60 cr

Common programme courses + major courses + specialization area courses

Elective studies 30 cr

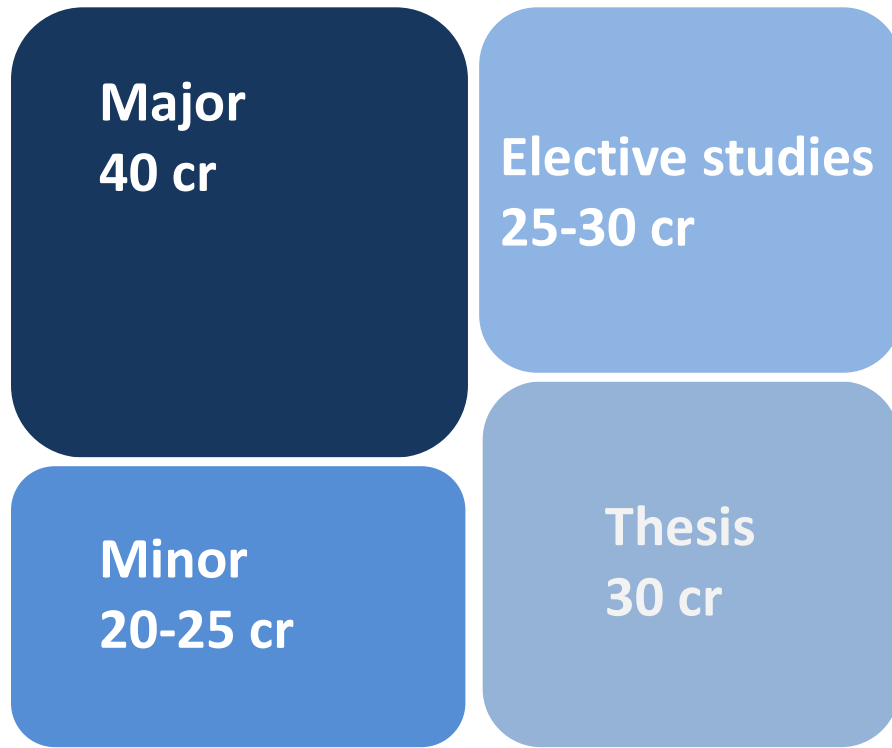
Minor studies, individual courses of your interest

Master's thesis 30 cr

Topic related to the major studies

Degree structure: Compact major

* NOT for Macadamia students!



Major 40 cr

Common programme courses + major courses + specialization area courses

Minor 20-25 cr

You can choose a minor from Aalto University, other Finnish universities or universities abroad

Elective studies 25-30 cr

Minor studies, individual courses of your interest

Master's thesis 30 cr

Topic related to the major studies

Mandatory language studies

BSc from Finland: no language studies needed

BSc from outside of Finland: language studies required

Language of secondary education:
Other than Finnish (/ Swedish)

→ 3 ECTS of foreign language studies *

Only specific
courses fit the
criteria!

English (B2+)
Spanish (B1-2+)
Chinese (B1-2+)
French (B1-2+)
German (B1-2+)
Russian (B1-2+)
Oral (o) + written (w)

Language of secondary education:
Finnish (/Swedish)

- 3 ECTS of foreign language studies
- Finnish/Swedish as “koulusivistyskieli”: your thesis abstract needs to have a language check
- 2 ECTS Swedish/Finnish as second national language (toinen kotimainen kieli)
- **Please contact us!**

*) Or you can take 3 cr Finnish/Swedish

Student Guide

Programmes

Master's Programme in Computer, Communication and Information Sciences

Starting your studies

Curriculum 2026–2028

Curriculum 2024–2026

Previous curricula

Recommended timetable

Planning your studies

Other studies

Thesis

Graduation

Applications

Contact

Minors

Courses 📄

Other studies

Language and communication studies

Student Guide / Programmes / Master's Programme in Computer, Communication and Information Sciences / Curriculum 2026–2028

Master's Programme in Computer, Communication and Information Sciences

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Curriculum 2026–2028

This curriculum comes into effect on 1 August 2026.

About the programme

Programme description	+
Intended learning outcomes	+
Content description	+
Completing studies in Finnish/Swedish	+

Computer Science

Learning outcomes of the major	+
Content description	+
Study track: Algorithms and Theory 60 / 40 ECTS	+
Study track: Big Data and Large-Scale Computing 60 / 40 ECTS	+
Study track: Secure Systems 60 / 40 ECTS	+
Study track: Quantum-Aware Software Systems 60 / 40 ECTS	-
Responsible professor: Alexandru Paler	
Extent: Long (60 credits) or compact (40 credits) major as CS track. Students taking a compact major take also a minor (20-25 credits). Students taking a long major may include an optional minor in their elective studies.	
Abbreviation: QSS	
Objectives	
The Quantum-Aware Software Systems (QSS) track equips students with the advanced theoretical and practical skills necessary to develop, optimize, and manage the classical and quantum software that interfaces with, leverages, or is inspired by quantum computing principles.	
The students graduating from the track will have a strong technical background on many of the modern core technologies for classical and quantum computing stacks. For example, they will be professionals capable of designing, architecting, and implementing hybrid classical-quantum applications, focusing on near-term quantum devices and future fault-tolerant quantum computers. At the same time, they will be experts in software engineering methodologies of quantum computing, including testing quantum programs, and managing the quantum computing stack.	
Students will have job opportunities in both the classical computing industry and the fast growing quantum technology industries. Moreover, students interested in pursuing doctoral studies after their M.Sc. degree can easily transfer to doctoral schools.	
Learning outcomes	
▪ Students can describe the mathematical foundations of quantum computation and differentiate between various quantum computing architectures, such as monolithic, distributed and	

Code	Course name	ECTS	Teaching
Compulsory CS core course, 5 ECTS			
For Quantum-Aware Software Systems (QSS) study track			
CS-E3220	Declarative Programming	5	I-II/1st year
Choose at least 20 ECTS			
Computer science core courses			
CS-C3130	Information Security	5	I/1st year
CS-E3190	Principles of Algorithmic Techniques	5	I-II/1st year
CS-E4715	Supervised Machine Learning	5	I-II/1st year
ELEC-E7852	Computational Design and Interaction	5	II/1st year
CS-C3100	Computer Graphics	5	2026-2027: no teaching, 2027-2028: I-II
CS-E4700	Logic and Hard Computational Problems	5	I-II
CS-C3170	Web Software Development	5	I-II, III-V, summer/1st year
CS-E4190	Cloud Software and Systems	5	I-II/1st year
CS-E4780	Scalable Systems and Data Management		I-II/1st year
Choose at least 15 ECTS			
Quantum-Aware Software Systems (QSS) study track courses			
CS-C3141	Operating Systems: From Classical to Quantum	5	I-II/1st year
CS-E4800	Artificial Intelligence	5	III-IV/1st year
CS-E4690	Programming Parallel Supercomputers	5	I-II/2nd year
CS-E4013	Seminar in Computer Science - Quantum Software	5	III-V/1st year
Long major: optional courses			
To complete a long major (60 ECTS), the student selects elective courses on top of the compact major (40 ECTS). The track optional courses listed below are recommended but not required. The rest of the credits for the major can consist of any Master-level computer science courses.			
CS-C3260	Practical Quantum Computing	5	I-II/2nd year
ELEC-	Quantum Information	5	V/1st year

Study related information systems at Aalto

Student Guide

- You can find all the information available about your studies and the university guidelines here
- <https://www.aalto.fi/en/student-guide>

Sisu

- Personal study plan (HOPS)
- Course enrollment
- Completed courses and grades
- Transcript of Records and Certificate of Student Status
- Graduation
- <https://sisu.aalto.fi/>

MyCourses

- Everyday course work and communication
- Course syllabus and course description
- <https://mycourses.aalto.fi/>

MyStudies

- Book appointments with Aalto staff (e.g. student services, study psychologists, tuition fee experts, etc.)
- Plan and submit your thesis
- <https://mystudies.aalto.fi/s/>



Planning your studies

- ☐ **Henkilökohtainen OPinto Suunnitelma = HOPS = study plan**
- ☐ You can have multiple study plans, but only one primary one
- ☐ Your degree = your courses in your primary HOPS
- ☐ You can only register to courses in your primary HOPS
 - ☐ A separate registration is always needed
 - ☐ Including a course in your study plan does not mean you can take it! Not all courses are open for all students
- ☐ You can always change your study plan, but remember to keep your study plan up-to-date
- ☐ Remember to apply for approval if needed!

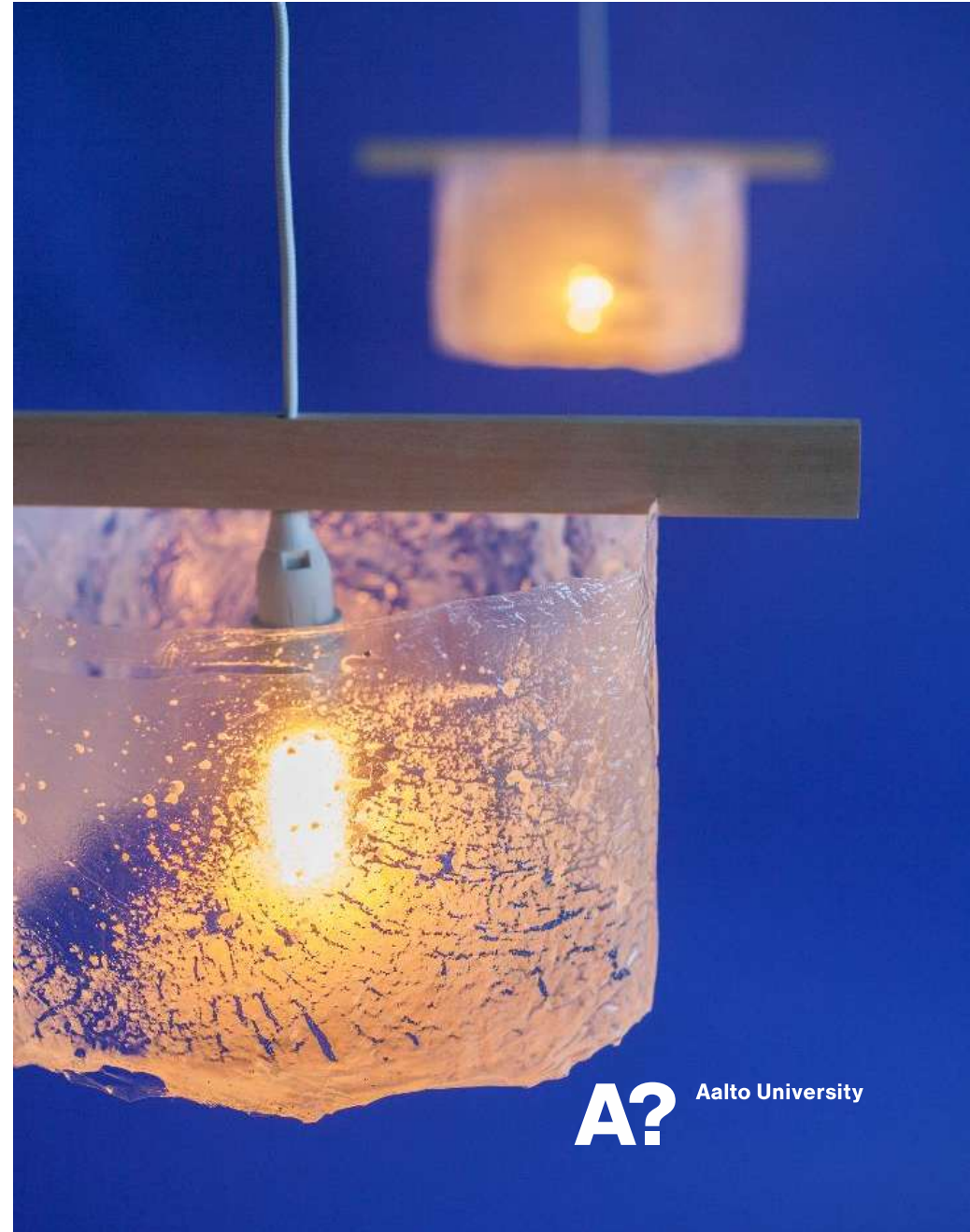
Planning your studies: electives

- ❑ (25-)30 ECTS depending on your major/minor
 - ❑ Compulsory 3 ECTS of language studies can be included in the ECTS limit, or exceed it
- ❑ As elective studies, you can complete a minor and/or take individual courses
 - ❑ Writing skills, new programming languages, interesting courses from other majors, language studies, economics, arts, you name it!
 - ❑ Please note that not all courses are open for all students, and that the courses may have prerequisites
 - ❑ Not allowed: basic courses from your own study area (CS-Axxx), some MOOC and FiTech courses
- ❑ We warmly recommend taking Finnish or Swedish courses
- ❑ It is possible to include 1-10 ECTS of practical training



Planning your Studies: electives

- ❑ There are numerous different minor options within Aalto, you can search minors by theme, level and target group in Student guide here: <https://www.aalto.fi/en/minors#/>
 - ❑ Some of the minors have a separate application procedure – if so, it is mentioned in the minor description
- ❑ Cross-institutional studies (RIPA)
- ❑ If you plan to complete Massive Open Online Courses (MOOCs, FiTech), please contact the programme staff beforehand.



Studying abroad

- **Student exchange is warmly recommended**
 - Recommended semester is 2nd year autumn
 - SCI exchange contact person Mari Dagnall (outgoing-sci@aalto.fi)
 - If you are liable to pay tuition fees, start planning your exchange as soon as possible!
- **Practical training or thesis abroad - possibility for a scholarship**
- **There are several double degree options for CCIS students. If you are interested, please contact Student Services**



Master's thesis

- Independently completed, 30 ECTS (6 months)
- Usually completed in 2nd year spring
- You can start planning your thesis at any point of your studies
- Planning your thesis is done in MyStudies
- You need to find a supervisor (professor or senior lecturer from Aalto) and advisor
- Can be done independently, or in a company or a research group etc.
- Two information sessions per year on your 2nd study year



Plan your studies



- Follow the [curriculum](#).
- Check also [Planning your studies –page](#).
- Consider the following questions:
 - What do I want from my studies?
 - What skills do I want to develop?
 - What are my career goals?

HOPS process



- Make your preliminary HOPS for the whole degree at beginning your studies.
- **You can change and edit the plan during your studies.**
- While selecting the courses for your degree, you should also schedule your studies, i.e. plan in which study period and during which study year you are taking the course. You can use Sisu's [Timeline function](#). This helps you to balance the workload between autumn/spring terms.
- You can register on the courses even before the HOPS is approved.

Get approval



- Some parts of HOPS require approval, and those parts are followed by “Approval required”
- Your choice of minor: once you have selected your minor, apply approval in Sisu.
- Elective studies:
 - If you are not yet completely sure about your course choices, you can apply for approval in Sisu later also.
 - Don't apply for approval in Sisu, if you haven't done all the selections for that part.

Students with Aalto scholarship need to have HOPS completed and approved by 30 October

HOPS in practise



[Home](#) > Structure of studies

Structure of studies

A new version of the 'Structure of studies' page is available. You can try it by selecting "Use the new Structure of studies page". You can still revert to the old version if you wish.

☒ Use the new Structure of studies page

You are using a new version of the Structure of studies page. If you can't perform the function you want in this version, go back to the old version by unchecking "Use the new Structure of studies page". If necessary, ask for guidance or contact the higher education institution.

STUDY PLAN

Demo 19.8. ▾

Education: SCI: Master's Programme in Computer, Communication and Information Sciences
(Computer Science, curriculum period: 2025-2026)

Created: 19.8.2025

Edited: 19.8.2025

Your study plan includes courses that have a version available for the current curriculum period. [View courses to update](#)

No study right for the plan.



SCI: Master's Programme in Computer, Communication and Information Sciences

EDU_SCI26 | Selections incomplete



▾ Master's Programme in Computer, Communication and Information Sciences (120 cr)

Computer Science (40–60 cr)

SCI3042 | Other studies | [Open brochure](#)

✓ Selections done | Selected: 40 cr

Completed: -

Algorithms, Logic, and Computation

✓ Selections done | Selected: 40 cr

Completed: -

Compact major

✓ Selections done | Selected: 40 cr
Completed: -

[Principles of Algorithmic Techniques D \(5 cr\)](#)

CS-E3190 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Declarative Programming D \(5 cr\)](#)

CS-E3220 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Web Software Development \(5 cr\)](#)

CS-C3170 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Change the completion method](#)

[Information Security \(5 cr\)](#)

CS-C3130 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Cloud Software and Systems D \(5 cr\)](#)

CS-E4190 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Cryptography D \(5 cr\)](#)

CS-E4340 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Applied Cryptography D \(5 cr\)](#)

CS-E4370 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Advanced Course in Algorithms D \(5 cr\)](#)

CS-E4500 | Course

 A newer version of the course is available.

✓ Completion method 1 selected.

[Show completion method](#)

[Home](#) > [Search](#) > Available courses at the higher education institution

Search for courses

Available courses at the higher education institution

Open university selection

Cross-institutional courses

Search for higher education institution courses

You can search for courses by text, filters, and their combination.

Higher education institution

Aalto University ▾

Search

CS-C3170

Q SEARCH

Search for courses by name or code. The search term must be at least three characters long.

Filters

Organisation

Search

Q

Open organisation menu

Curriculum period

Search or select

▼

Course level

Search or select

▼

Language of learning (course)

Search or select

▼

Completion method

Search or select

▼

Language of instruction

Search or select

▼

Teaching in a specific period

Search or select

▼

1 search result

[Web Software Development \(5 cr\)](#)

[CS-C3170](#)

Course's language of learning: English	Curriculum period: 2023-2024
Language of instruction: English	Organiser:
Teaching period: Summer (2023-2024), I-II (2024-2025), II (2024-2025), III-Summer last (2024-2025)	Department of Computer Science
	Higher education institution: Aalto University

Sort

Relevance ▾

[ADD TO COURSE CART](#)

[Home](#) > [Web Software Development \(5\)](#) > Completion methods

Web Software Development (5 cr)

CS-C3170

[ADD TO THE PLAN](#)

[ADD TO COURSE CART](#)

Course version 

2026-2027 (Aalto); 2027-2028 (Aalto) ▾

Information sheet	Completion methods	Equivalences and substitutions	Continuous learning courses	Cross-institutional studies
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Completion methods

METHOD 1	METHOD 2	ASSESSMENT ITEM	TEACHING	
•		Participation in teaching (5 cr)	Contact teaching 10.9.2026–11.12.2026	SELECT
	•	Independent study (5 cr)	Blended teaching 11.1.2027–11.6.2027	SELECT

Completion method 1

▾ Contact teaching 10.9.2026–11.12.2026

[Basic information](#)

[Registration](#)

[Groups and study events](#)

LANGUAGE OF INSTRUCTION

English

STUDY METHODS

Study methods:
Attending lectures in addition to independent study including but not limited to studying course materials and external resources and working on course assignments.

HOPS Process: recommendations

- We recommend that you make your preliminary HOPS for the whole degree already. You can change it at any time!
- You need to have at least the courses for your first semester in your HOPS *as soon as possible* so that you can enroll to courses
- Students with scholarship: you need to have a complete HOPS by the end of October
- Remember to apply for approval if needed!
 - Always needed for elective studies

If you need help, contact student services!



Other recommendations

Good study practices and AI

- Teachers may restrict the use of AI, giving instructions on its use and their assessment criteria as the course starts.
- Students are always responsible for the content of the work they turn in.
- Teachers may ask a student how AI was used in a learning assignment.
- Unless otherwise instructed, using AI for the wording of a text or coming up with ideas is OK; presenting a text that was merely the output of AI as though it were your own writing is not. The gist and bulk of texts must be your own thinking.
- If you have questions or ambiguities about AI, ask the teacher for further instructions before using it!

Wellbeing and accessibility

- **The Starting Point of Wellbeing offers students advice and guidance on services related to wellbeing:**
<https://www.aalto.fi/en/study-at-aalto/starting-point-of-wellbeing>
- **Accessibility in studying: <https://www.aalto.fi/en/aalto-university/accessible-aalto>**
- **Contact person in SCI related to accessibility matters, such as study arrangements, is planning officer Päivi Koivunen(paivi.koivunen@aalto.fi)**
 - **Book a meeting in MyStudies**

Student life

School of Science has five different guilds:

- **Tietokilta** (Computer, Communications and Informations Sciences)
- **Athene** (Information Networks)
- **Fyysikkokilta** (Mathematics and Operations Research & Engineering Physics)
- **Inkubio** (Life Science Technologies)
- **Prodeko** (Industrial and Engineering Management)



Remember also to...

- **Read the newsletters**
 - Scuuppi – SCI Student Services newsletter to all SCI students
 - Tuutti – CS Department newsletter to CS students
 - Career Design Lab News to all students
- **Check your Aalto email regularly!**
- **Email etiquette – How to maximize success with emails:** <https://www.aalto.fi/en/departments-of-computer-science/email-etiquette-how-to-maximize-success-with-emails>

Feel free to ask
questions in person or
in Presemo!

presemo.aalto.fi/ccisinfo



Next session

- Computer Science 12-13, *T2 CS-Building, after which (13->)*
 - Algorithms and theory -track *A237 CS-Building*
 - Big Data and Large Scale Computing -track *B119 CS-Building*
 - Web Technologies, Applications and Science -track *A142 CS-Building*
 - Secure Systems -track *B224 CS-Building*
 - Quantum-Aware Software Systems -track *A 106CS-Building*
- 12.00 - 14.00 Human-Computer Interaction *T5, CS-Building*
- 12.00 - 16.00 Machine Learning, Data Science and Artificial Intelligence *T4 CS-Building*
- 11.15 – 16.00 Software Engineering *TU6 (Maarintie 8)* **NB!** Notice the starting time. You'll have lunch at 11:45
- 13:00 – 15.00 Game Design and Development *O103 (Otaniementie 14)*
- **16:15-17:15 Teekkarilife, Aalto-hall, Otakaari 1**