



Aalto University
School of Science

Major in Software Engineering: Orientation Week Event

The SSE Faculty
August 25th 2026

Schedule

Time	Subject
11:15	Welcome, Prof. Fabian Fagerholm
11:20	Introduction of the faculty and new students
11:45	Lunch (TuAS Amica)
12:30	Overview of the SE major, Prof. Fabian Fagerholm & faculty
13:45	CS-E4920 Portfolio in SE course info, Jari Vanhanen
14:00	Free discussion with faculty

Latest news: SSE → SE

- The major changed its name to *Software Engineering* from autumn 2026 onwards
- The study contents are almost the same as before
 - Clearer structure
 - Clearer indication of required research methods and academic writing courses to support master's thesis
 - Clearer possibilities to tailor your studies with optional courses

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SE Faculty



**Fabian
Fagerholm**



**Casper
Lassenius**



Haoye Tian



Lassi Haaranen



Jari Vanhanen



Leo Leppänen



Marko Nieminen



**Johanna
Viitanen**



**Mika P.
Nieminen**



Sari Kujala

Why Software Engineering

Megatrends

Digital products and services pervade all industries and society

- New business models can revolutionize and/or disrupt existing businesses
- Digital service delivery upscales businesses
- Lots of money to be made 😊

The Internet of things (IoT)

- Healthcare, social care, wellbeing; BioIT, process management
- Automation, monitoring/sensing/controlling, smart and sustainable cities

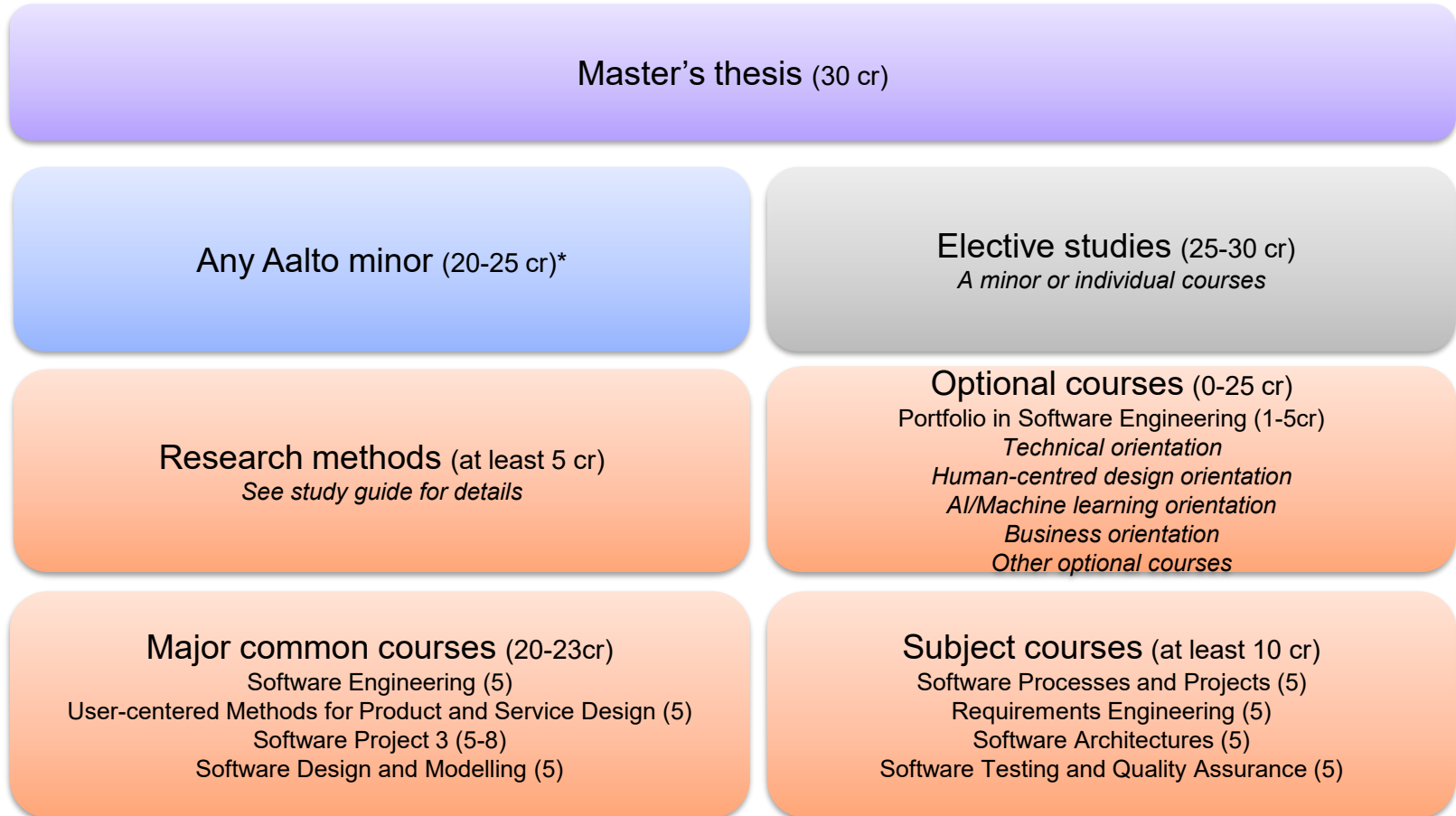
Artificial Intelligence and Machine learning

- Mostly software!
- Need for software engineers to build and maintain

Peculiarities of the SE major

- Problems are typically real-world design problems that show characteristics of so-called wicked problems
 - Often ill-defined
 - There are many, possibly equally valuable candidate solutions
 - There is often no “perfect” or single “correct” solution
 - Different stakeholders might have conflicting opinions about the problem or solution
 - You cannot know the solution until you have developed it
 - Sometimes understanding the problem is more difficult than building the solution
- You will learn by doing as well as by reading
 - Significant amount of practical project work
 - Often with real-world customers

Overview of Software Engineering major



Network

- WhatsApp, Telegram
- Volunteer?
 - Do it now! 😊
- Get access to A2 & B2 corridors
 - rooms of SSE faculty, postdocs, PhD students, and MSc thesis workers



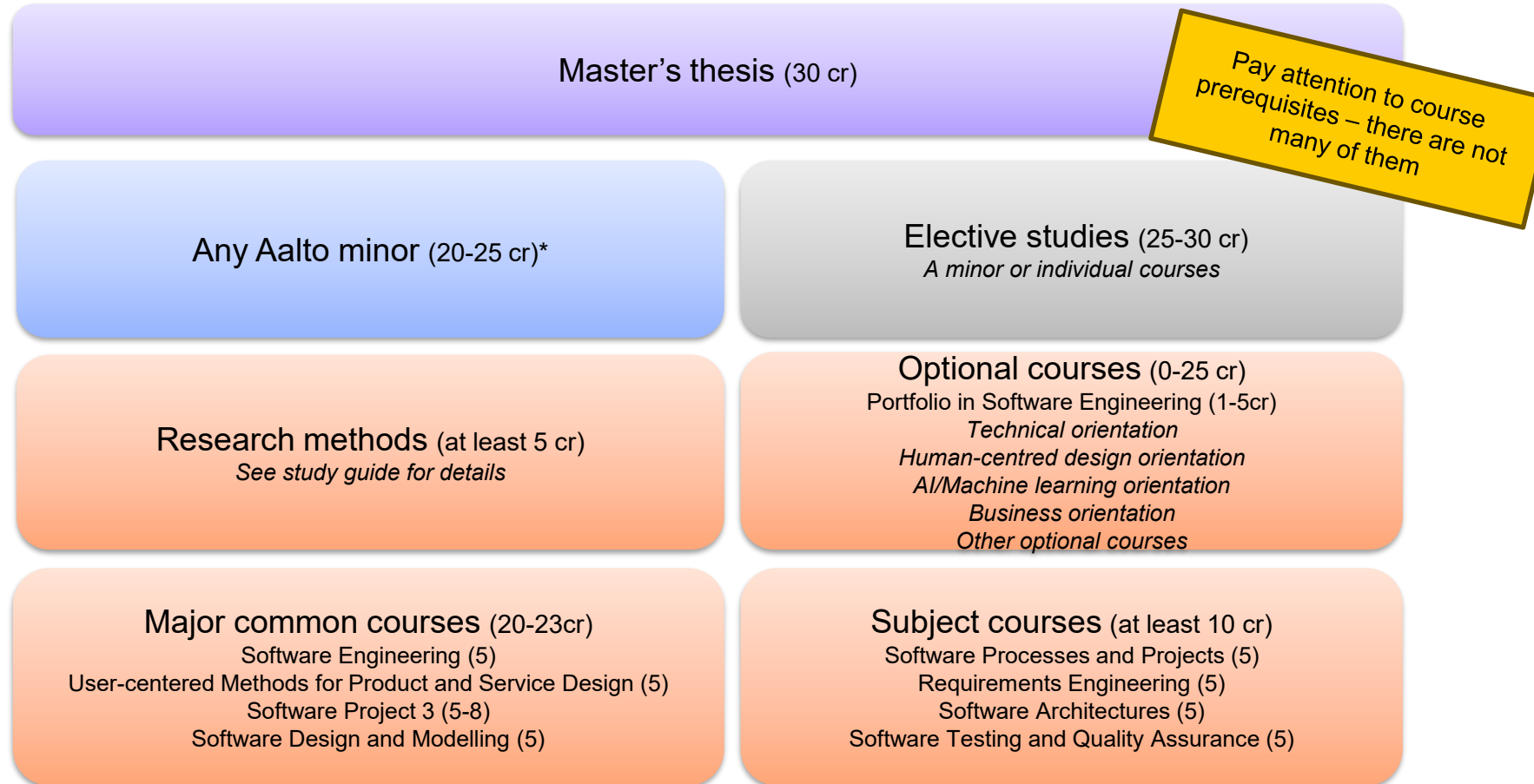
[How to get an access token and access rights | Aalto University](#)

LUNCH

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Overview of Software Engineering major

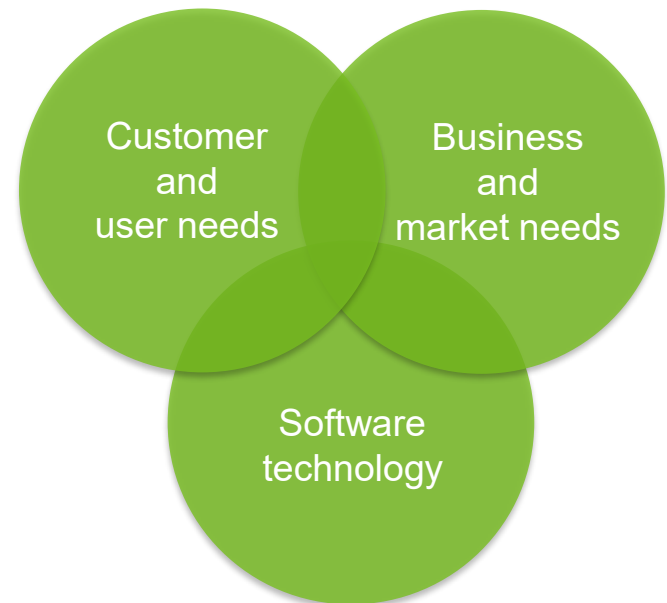


Human-centred design orientation – Why

- Digital services can change any business and public sector.
- Digital services are developed by multidisciplinary teams.

Professionals who are able to develop digital services by combining

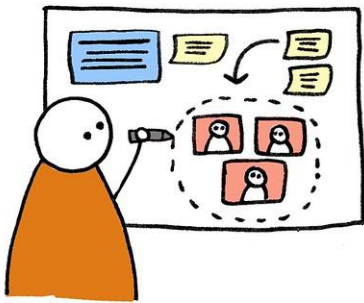
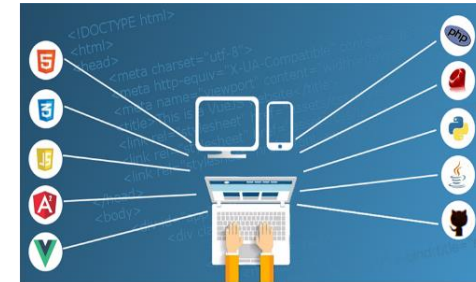
- service design
- user-centered design
- software engineering
- business and entrepreneurship



Human-centred design orientation

Students learn to:

- Discover and analyze **customer, user and business needs**
- **Apply methods** from software engineering, service design and user-centered design **in practice**
- Define an efficient **design process** for the needs of a company and projects



- Collaboratively **develop digital services** that create customer and business value
- Create innovative **service concepts** in multidisciplinary teams
- Critically **evaluate** service concepts and digital services
- Build up a strong conceptual foundation for continuous learning.

Human-centred design orientation – Why

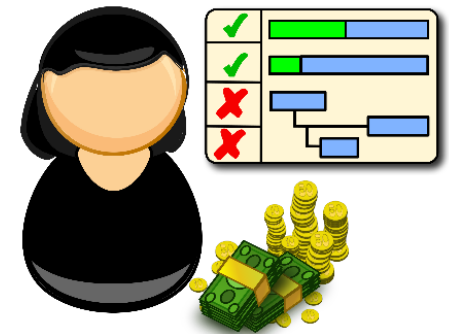
After completing their studies, students can work in

- industry
- design and engineering companies
- public organisations
- startups

as

- product owners
- software developers
- user interface and interaction designers
- service designers
- usability specialists
- user experience managers
- project managers
- business analysts.

These studies also provide
a good starting point for
doctoral studies.



Human-centred design orientation

Optional courses

- Creative Digital Concept Design (CS-E5252)
- Collaborative Evaluation of Interactive Systems (CS-E5230)
- Cross-platform development (CS-E4271)
- User Interface Construction (CS-E5220)

Master's thesis (0-10 cr)

Any Aalto minor (20-25 cr)*

Research methods (at least 5 cr)
See study guide for details

Optional courses (0-25 cr)
Portfolio in Software Engineering (1-5cr)
Technical orientation
Human-centred design orientation
AI/Machine learning orientation
Business orientation
Other optional courses

Major common courses (20-23cr)
Software Engineering (5)
User-centered Methods for Product and Service Design (5)
Software Project 3 (5-8)
Software Design and Modelling (5)

Subject courses (at least 10 cr)
Software Processes and Projects (5)
Requirements Engineering (5)
Software Architectures (5)
Software Testing and Quality Assurance (5)

Courses that strengthen the multidisciplinary contents of the studies are especially recommended!

Topics of Master's thesis (completed)

- ✓ Introducing User-Centred Design In A Small-Size Software Development Organization
- ✓ Designing Mobile Human–Data Interfaces for Public Transportation Users
- ✓ Designing AI Agent Interactions in CRM Systems
- ✓ Unveiling the Mind in Action: Simulating Cognitive Reasoning in Behaviours with Large Language Model Persona Agents
- ✓ Understanding the role of Unix shell in software development and developer experience
- ✓ Toward Strategic Usability - user knowledge as a basis for new service development
- ✓ Evaluating Accessibility of Psychotherapy Mobile Application with Mental Health Patients
- ✓ Post-implementation Training of eHealth Services Facilitating Patient-Provider Communication: Good Practices and the Supporting Role of Software Vendors
- ✓ Impact of an Interactive Computer-Based Guideline on Nurses' Experiences in Medical Device Training
- ✓ Comparing Microphones Used in Medical Dictation Based on Speech Recognition Accuracy and Usability
- ✓ From Unstructured Data to Structured Insights – Developing a GenAI-Driven Prototype for Structuring Voice-based Market Feedback



Access to agricultural advisory services



Collaborative Student Challenge with
Bishop Stuart University, Uganda

1. Build a mobile application module with an online web portal that help farmers request for loans online, save money and access research information and advisory services online.
2. Promote the mobile app among farmers and train them digital skills to operate it.
3. Help Farmers in weather forecasting to help them make more timely and informed decisions.

App Testing and Field Advisory Test



Human-centred design orientation

- Teaching staff can support you
- Do not hesitate to contact us 😊
 - Marko.Nieminen@aalto.fi, room: A229
 - Mika.Nieminen@aalto.fi, room: A226
 - Johanna.Viitanen@aalto.fi, room: B212

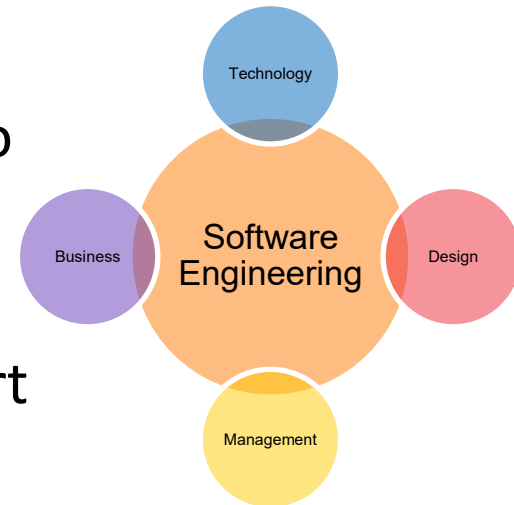


Coffee Break!

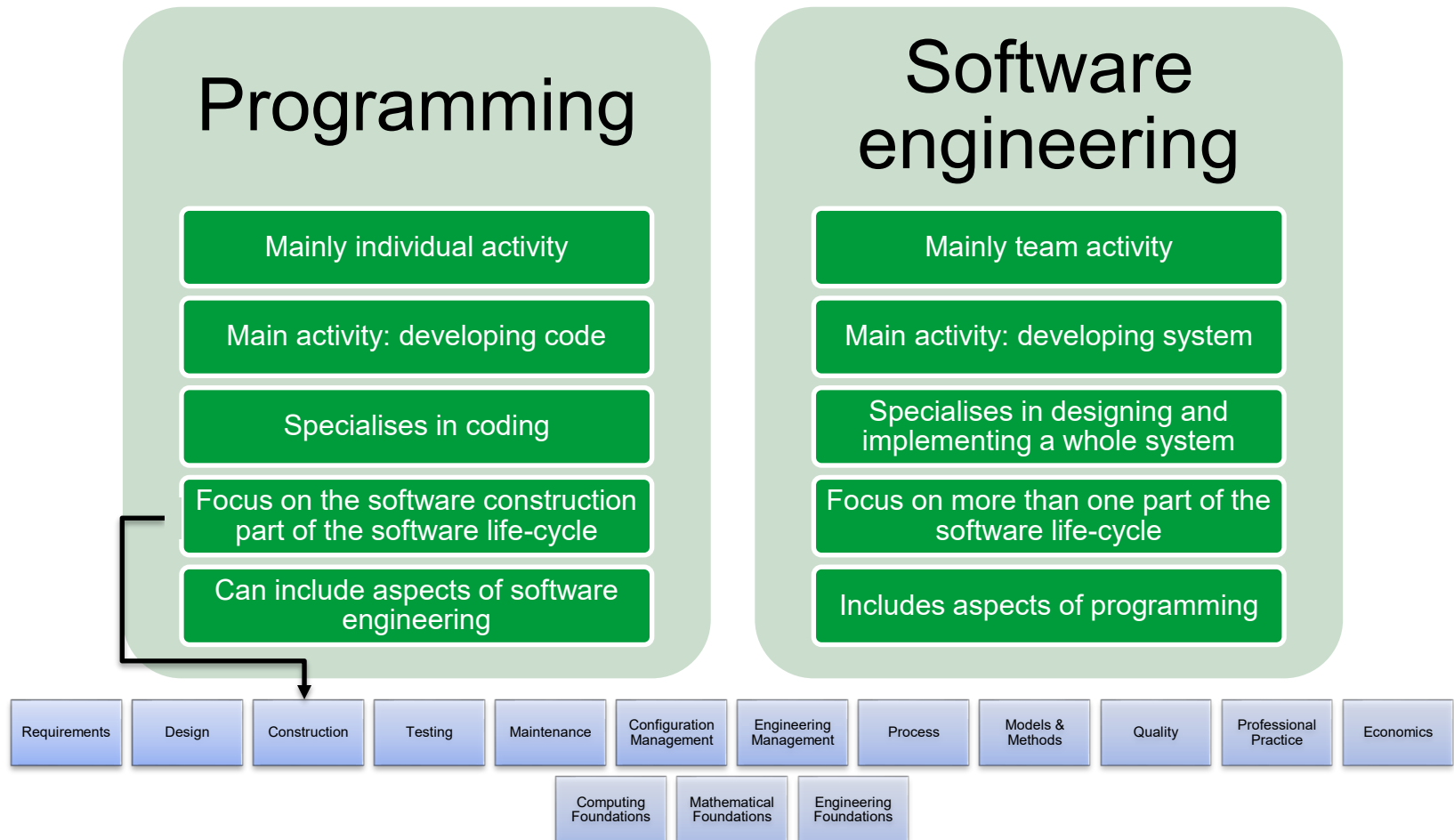


Why Software Engineering

- If you are interested in building software systems for real-world use
- There is a large need for software engineering experts in industry
- Most problems in software projects are due to problems related to SE rather than, e.g. technologies
- Many positions, both management, and expert (e.g. architect) are well paid
- Gives a good basis for software entrepreneurship



Programming vs Software Engineering



Software Engineering

- Focuses on understanding software development in professional contexts
 - Working in and managing teams and organizations
 - Software engineering activities and related methods
 - Requirements engineering
 - Specification and Design (architectures, low-level)
 - Implementation
 - Testing and quality assurance
 - Deployment
 - Traditional and modern approaches
 - Waterfall, Agile, Scrum, XP, Lean, Continuous SE, AI&SE
 - Working with real customers



Technical orientation

Optional courses

- Design of WWW Services (CS-E4400)
- WWW Applications (CS-E4460)
- Cloud Software and Systems (CS-E4190)

Master's thesis (0-10 cr)

Any Aalto minor (20-25 cr)*

Research methods (at least 5 cr)
See study guide for details

Optional courses (0-25 cr)
Portfolio in Software Engineering (1-5cr)
Technical orientation
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AI/Machine learning orientation
Business orientation
Other optional courses

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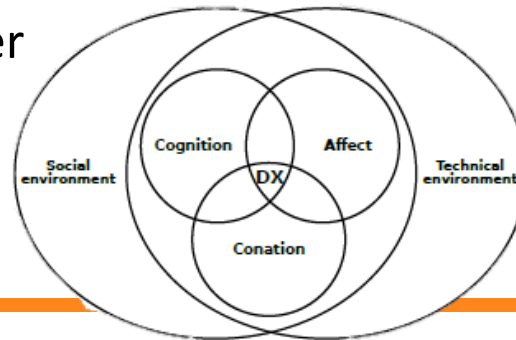
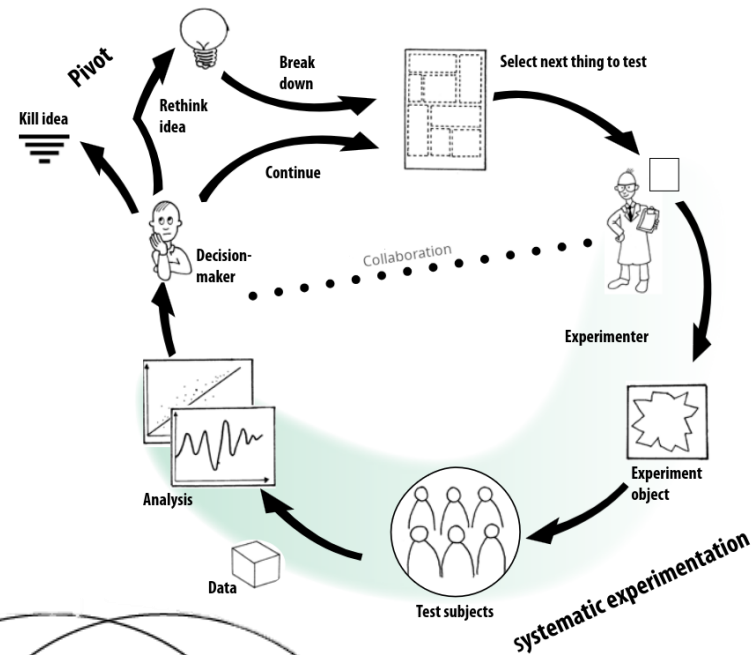
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Outcome

- Typical SE roles
 - Software developer
 - Software development team leader
 - Tester
 - Architect
 - Quality/test manager
 - Process developer
 - Project manager
 - Product manager
 - Higher level manager
 - Entrepreneur
- Master's thesis
 - Typically done in industry
 - Typically, empirical – using real-world evidence
 - You learn at least one data collection and analysis method that can be useful in your later career, for example:
 - Planning and conducting interviews
 - Designing questionnaires
 - Extracting product / process data
 - To prepare for the thesis
 - Research Methods in Software and Service Engineering
 - Seminars to practice reading and writing scientific text
 - Talk about ideas with potential supervisors early

Current Research

- Agile software development
- Continuous experimentation
 - Naturalistic decision-making in Continuous Experimentation project (Research Council of Finland, 2022-2026)
 - Data-limited CE (Wallenberg Foundation, 2022-2025)
 - 1 PhD thesis ongoing
 - Several MSc theses
- Human factors and developer experience
 - 3 PhD theses ongoing
 - Several MSc theses



AI/Machine learning orientation

Optional courses

- Special Course in Machine Learning, Data Science and Artificial Intelligence (CS-E4075xx)
- Supervised Machine Learning (CS-E4715)
- Probabilistic Machine Learning (CS-E4825)
- Deep Learning (CS-E4890)
- Deep Generative Models (CS-E4891)
- Artificial Intelligence (CS-E4800)
- Trustworthy Artificial Intelligence (CS-E4805)

Master's thesis (3 cr)

Any Aalto minor (20-25 cr)*

Research methods (at least 5 cr)
See study guide for details

Optional courses (0-25 cr)
Portfolio in Software Engineering (1-5cr)
Technical orientation
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Other optional courses

Major common courses (20-23cr)
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Software Architectures (5)
Software Testing and Quality Assurance (5)

Courses that strengthen the multidisciplinary contents of the studies are especially recommended!

Business orientation

Optional courses

- Introduction to Project Management (TI-C3015)
- Strategic Information Technology Management (37E00200)

Master's thesis (30 cr)

Any Aalto minor (20-25 cr)*

Research methods (at least 5 cr)
See study guide for details

Optional courses (0-25 cr)
Portfolio in Software Engineering (1-5cr)
Technical orientation
Human-centred design orientation
AI/Machine learning orientation
Business orientation
Other optional courses

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Courses that strengthen the multidisciplinary contents of the studies are especially recommended!

Technical orientation

(+ AI/ML and business orientations)

- Teaching staff can support you
- Do not hesitate to contact us 😊
 - Fabian.Fagerholm@aalto.fi, room: A223
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 - Haoye.Tian@aalto.fi, room: A224
 - Lassi.Haaranen@aalto.fi, room: A220
 - Jari.Vanhanen@aalto.fi, room: A217



Questions?

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