Recommendations for the supervisors of SECCLO master's thesis 2024

About the programme

SECCLO Master's Programme in Security and Cloud Computing is a full-time Master of Science degree programme with a duration of two years. During these two years, the students study at two of the six partner universities: first year studies at Aalto University School of Science in Finland, and second year studies at one of the following exit universities: The Royal Institute of Technology (KTH) in Sweden, The Norwegian University of Science and Technology (NTNU), The Technical University of Denmark (DTU), University of Tartu (UT) in Estonia, or EURECOM, France. The thesis is written during the fourth semester of the two-year course, i.e., in the spring of the second year. The students will receive a degree from each of two of the universities where they have studied. SECCLO is one of the top-quality Erasmus Mundus master programmes selected and funded by the European Commission Erasmus+ Programme.

The SECCLO programme has agreed on joint supervision of thesis, which means that there are two supervisors, one from each of the two universities which the student attends. The local rules for supervision and evaluation of thesis differ between the universities. Building a joint programme across institutions is challenging, and these guidelines aim to support the academic and administrative staff involved in thesis procedure and to ensure a smooth graduation process. One goal of the joint supervision is to harmonize the institutional practices and policies among the European universities. The active collaboration between the supervisors during the thesis supervision can also lead to new research co-operation.

Thesis project

The thesis research should be done as a member of a research group at one of the partner universities, in another research institution, or in an industry R&D project team. In SECCLO terminology, the universities *supervise* the thesis, while the hosting organization *advices* the student.

The thesis projects are typically related to the programme content, i.e., security and cloud computing. However, the SECCLO programme aims to educate graduates who can work in diverse roles in the IT and software industry as well as in organizations that make use of information technology. Therefore, the thesis project may be done on equally diverse research or engineering topics.

It is up to the student to find the project and to negotiate with the organization that provides it. The SECCLO programme does not sign a contract with the organization that hosts the student for the thesis project. For the academic supervisor, this means that they do not have full control over the project and goals. It also means

that the student may sometimes receive conflicting requirements and pressures from the employer and from the academic supervisor.

The students are encouraged to select projects that increase their employability and career prospects after graduation. This could mean gaining industry work experience in Europe or learning specific marketable technical skills. Academic research projects are recommended to those who consider doctoral studies after graduation. When the supervisor has influence over the project, it is important to discuss the student's career plans and individual learning goals. Nevertheless, keep in mind that SECCLO has many excellent students for whom the thesis project is a rare opportunity to try something new and exciting before returning to their professional careers.

It is important for the student to work in a group and to have a named advisor who is genuinely interested in the project and willing to spend time on advising them. For this reason, we discourage students from defining their own thesis topics. If you agree to supervise the student's own topic or any topic without a named advisor, you should be prepared to provide the day-to-day advice yourself.

The work by the student may be paid on unpaid depending on the rules of the two universities and the organization where the project is done. Many of the SECCLO students receive a scholarship funded by the European Commission, and if the thesis is done in an EU-funded project, the student must inform the programme coordinator to ensure that the student does not receive double EU funding. Depending on the university and country, similar rules may apply to public funding from national sources.

The SECCLO programme has rules about the countries where the student is physically located during the project. If the student is at any time located outside the programme countries, the programme coordinator must be informed and will provide further advice.

Thesis topic and supervisors

Before starting the thesis project, the student must find two supervisors, one at Aalto and another at the exit university, and agree on the thesis topic with both supervisors. One of the two supervisors must be named as the main supervisor. Each university has its own regulations on who (e.g., professors) is authorized to supervise theses in the programme.

The purpose of having two supervisors is to ensure that the thesis meets the expectations of the two universities. The main supervisor is responsible for day-to-day guidance of the student. The secondary supervisor is encouraged to participate in the research and provide feedback; however, the secondary supervisor's main role is to fulfil the formal role of thesis supervisor at the other university.

As a rule, the supervisor at the exit university is the main supervisor, but upon agreement, the Aalto supervisor may become the main supervisor. Some factors that may be considered when deciding on the main supervisor are the supervisor's research interests, the supervisor's familiarity with the organization that hosts the project, and geographic proximity that enables face-to-face meetings (if applicable). When students ask you to act as the secondary supervisor, please agree to it even if the thesis is not in the focus of your own expertise.

The topic should meet the requirements of both universities, and it should match the goals of the organization that hosts the thesis project. When the student is working in an industry R&D project, they will need the main supervisor's help in finding an academic angle (e.g., theoretical framework, research problem, and research

methods) to what otherwise might be an advanced engineering project. The main supervisor may ask the student to arrange a meeting between the project team and the supervisor(s) to agree on common goals and to explain the academic requirements and timeline.

Note that finding the thesis project, defining the topic, and getting the agreement of two supervisors can be a cumbersome task for the students. They may be negotiating with multiple potential projects before signing an employment contract or otherwise committing to one. Please be patient with the students and understand that the first topic proposal is not always the final one. Also, students often talk first to the professor they know best or trust most. If someone else at your university is more qualified to supervise the specific topic, guide the student to them.

Supervision

The thesis will be supervised by Aalto and the exit university according to the local procedures and regulations of the respective institutions.

The student is responsible for keeping both supervisors updated on the thesis progress. However, the main supervisor should be the main contact person for the student for discussing the thesis procedure and for getting advice and feedback throughout the project. The secondary supervisor is responsible for informing the student about the local administrative or academic requirements related to thesis and providing feedback when it is needed. Parallel reviews of the thesis drafts by the two supervisors should be avoided; instead, ask the student to make improvements based on the first review before starting the second review.

The most important task of the main supervisor is to monitor the thesis project and the student's progress in writing, so that the thesis is completed on time. Therefore, the main supervisor should insist on regular (e.g., monthly or weekly) meetings with the student. When the research or engineering project meets difficulties, the supervisor must help the student replan or refocus and complete the thesis regardless of schedule of the applied project. The thesis submission deadlines in the SECCLO programme are determined by the thesis regulations and tuition fee rules of the two universities. The continuation of the program also depends on its nearly perfect record of on-time graduation.

The main supervisor or the local coordinator is responsible for keeping the SECCLO programme coordinator updated on the student's progress. The student is asked to provide a progress report of the thesis to the main supervisor by the end of March, and the main supervisor must then report the thesis status (e.g., "on schedule") to the programme coordinator. In case of any major difficulties, including personal or health issues, that could cause a delay in the thesis project, it is essential that the SECCLO programme coordinator is informed early. Solutions can be found for most issues if the student or supervisor contacts us early.

Joint thesis and university-specific requirements

The thesis is a joint component of the two degrees. Thus, the same thesis must be submitted to both universities. The student should reformat the front matter, typically only the front page and the abstract page, to match the formatting requirements of each university. The rest of the pages in the thesis must have exactly the same content and preferably also the same layout for both universities.

It is crucial that the thesis fulfils the local requirements at both universities. For example, if one of the universities requires specific topics or subsections to be included, they will be included in the thesis for both universities.

One important consideration is that the thesis at Aalto may be either academic research leading to scientific results, or an advanced engineering project where the latest scientific knowledge is applied to a technical problem. The exit university, on the other hand, may require scientific research. If this is case, the supervisors should ensure throughout the project that the thesis defines a research problem and meets other requirements for scientific work. Fortunately, the boundary between advanced engineering and scientific research in computing is not sharp, and the solution may be as simple as presenting the project as a case study where previous scientific results are confirmed or technology is evaluated in a new setting.

The submitted thesis is a public document. Thus, while there is no obligation to publish the thesis online, anyone can request access to it. This requirement arises from the Freedom of Information legislation in Finland. Therefore, confidential information, e.g., information under a non-disclosure agreement, cannot be included in the written thesis. On the other hand, there is no requirement to publish the raw data or software code on which the thesis text may be based. In practice, the only problematic cases are inventions for which patent has not yet been filed, and consulting projects where the NDA covers the existence of the project.

The company or other organization that hosts the thesis project can be mentioned in the advisor affiliation, acknowledgements section, and in appropriate parts of the text. Because of Aalto thesis regulations, the final thesis title should not include company or product names or acronyms. When desired, names of companies and products can be omitted from the thesis, and they may be referred to as "case company", "system under test" etc.

It is the student's responsibility to learn about the requirements of both universities and to communicate with both supervisors about them. The main supervisor is encouraged to ask about the criteria of the other university, help the student meet the criteria, and guide the student in writing the text so that it explicitly addresses any specific requirements.

Thesis presentation or defence

The student gives presentations or defends theses following the rules of both Aalto and the exit university. In 2024, the presentation or defence may be online.

- Aalto: All SECCLO students give a presentation at Aalto on specified days (online presentation days planned on 18-19 June 2024). A presentation is required, but grading is based on the written thesis.
- KTH: A thesis presentation must be given either at KTH or at Aalto. An opponent from KTH must be present.
- NTNU: If the main supervisor is affiliated with NTNU, NTNU rules apply and the student is required to present the work and attend the entire presentation day. Physical presence at NTNU is preferable, but online participation may also be arranged. If the main supervisor is affiliated with Aalto, the presentation at Aalto is sufficient.
- DTU: Defence (oral examination) is required, either physically at DTU or online.
- UT: Defence is required physically at UT (or exceptionally online)
- EURECOM: Defence is required physically at EURECOM.

At DTU, UT and EURECOM, the grading is decided at the defence event. Therefore, it is recommended that both supervisors attend the defence, either physically or online.

Evaluation and grading

The thesis is evaluated by both Aalto and the exit university supervisors or evaluators, and each university awards a grade for the thesis based on its own criteria and grading scale. One exception to this is that, when the NTNU supervisor is not the main supervisor, NTNU accepts the grade from the partner university.

A key goal of the Erasmus Mundus programmes is to harmonize practices including grading across universities. Therefore, the two supervisors should exchange views before the evaluation or defence and aim to coordinate the grading. In rare cases, it may not be possible to reach the same grade because of differences in the grading criteria or process (e.g., external evaluator or defence). One outcome of the programme is increased understanding of such differences, which will lead to more harmonized processes over time.

The SECCLO partner universities have adopted the ECTS grading scale defined in the Bologna process. The mapping of the local thesis grades to the ECTS grades is shown in the table below.

ECTS Marks	AALTO	KTH	NTNU	DTU	UT	EURECOM
A	5	PASS	A	12/A	A	16- 20
B	4	FAIL	B	10/B	B	14-15
C	3		C	7 /C	C	12-13
D	2		D	4/D	D	11
E	1		E	02 (passable)/E	E	10
Fx/F	0		Fx/F	00 or -3 (implies new thesis work) /Fx,F	Fx/F	0-9

If there is a risk of failure, the student must be informed early enough so that the student has the opportunity to improve the thesis before its final submission. *Rejection of the thesis at one university stops the graduation also at the other double-degree university.*

Timeline

The thesis **work should start in January** or, for EURECOM students, in February. Delays in the start can cause major problems later, and the programme coordinator should be kept aware of any potential delays. If the delay is caused by the organization that is supposed to host the project, the supervisors should help the student make a backup plan and get started anyway.

As a **half-way checkpoint**, the main supervisor should confirm by email by the 15th of April to seclo@aalto.fi that the thesis work is progressing as planned. The Erasmus Mundus scholarship payments will be suspended if the student is not making progress on the thesis without a valid reason.

The student should submit the thesis for evaluation **by the earliest to the two deadlines set by the two universities.** The thesis must be submitted **at the same time** to both degree-awarding universities and with

the same content. The student may take a day or two after the earlier deadline to edit front matter and layout for the other university.

	Submission of thesis	Presentation
Aalto	Submit by the deadline of the exit university, but **at latest on 31 July 2024** for graduation from Aalto on the same date. Students at EURECOM may also submit by the EURECOM deadline in mid-August, in which case they graduate from Aalto on 30 September 2024. July is holiday month in Finland so getting feedback and approval for submission from supervisor by the end of June is recommended.	Thesis presentation required before 31 July 2024. Online presentation days on 18-19 June 2024.
KTH	Typically, by mid-June.	KTH accepts Aalto presentation if an opponent from KTH is present. KTH can also organize the presentation separately. The presentation is given before submitting the thesis.
NTNU	Typically, June.	If the main supervisor is from NTNU, a presentation at NTNU is required. If the main supervisor is from Aalto, NTNU accepts the Aalto presentation. Presentation is normally given before submission of the thesis.
DTU	June (typically 5 months from starting date).	Defence (oral examination) takes place no later than 10 workdays after the scheduled submission date.
UT	Thesis submission typically in the beginning of May	Defenses take place in several days in the beginning of June. SECCLO students usually defend during the first days of the defense period.
EURECOM	End of July or mid-August	Defence takes place after the submission in mid-September 2024.

The supervisor should inform the student early in the process about their personal timetable for reviewing drafts and providing feedback. Otherwise, students might expect to receive feedback on short notice during the supervisor's travel or holidays. For example, many supervisors at Aalto will be away from midsummer to the end of July, and they are not required to provide feedback on the thesis during that time. If you are supervising multiple students, coordinate with them to avoid situations where you have to review multiple final drafts at the last minute.

Contacts for further information

Contacts for the SECCLO programme and this document:

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Key academic contacts at each partner university for further information about SECCLO and the thesis procedures:

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