

NORDIC FIVE TECH



HANDBOOK FOR ADMINISTRATION AND IMPLEMENTATION OF JOINT N5T MASTER PROGRAMMES

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1 General N5T policy on Joint Master Programmes

Joint master programmes are considered as one of the core activities within the Nordic Five Tech alliance. On an overall level, the joint programmes of the alliance support the commitment of N5T to become the Nordic checkpoint for international MSc in Engineering students. For further information on the N5T mission statement and vision please consult the N5T website: www.nordicfivetech.org

The N5T rectors have endorsed the following set of principles regarding the structure of joint programmes:

- **Added N5T-value:** Joint N5T programmes should be based on the concept of added N5T-value. The added value may be identified in terms of complementary strengths within an engineering field where the member institutions have a strong tradition. This added value should constitute the structuring principle of the programme and at the same time provide the main selling points for marketing the programme to prospective students, N5T and international.
- **Double Degree Programme:** Development of the N5T joint programmes has been funded by the Nordic Council of Ministers as “Nordic Master Programme”. The alliance seeks to implement programmes resulting in double degrees. In order to fulfil the requirements for the calls, a double degree framework has been developed. The model described in this handbook ensures that all five institutions are able to issue a (double) degree.
- **1 + 1 year model:** The N5T partners have established consensus on a model where students study at two degree awarding universities. Students will thus have to choose between combinations of institutions offering specified programme components. The model implies the possibility of having multiple entry institutions, depending on the structure of the programme.
- **Pre-defined study tracks with competence profiles:** In order to ensure progression and integration of the programme components, the programmes are structured with clear competence profiles for each of the mobility tracks.
- **Co-supervision of thesis work:** This concept serves a two-fold purpose:
 - a) In order to issue a diploma, all five institutions require that thesis work is conducted with a supervisor from the two institutions in each case.
 - b) Thesis work conducted with supervision from each of the two degree awarding institutions involved in the study track is a way to ensure integration of the programme components.
- **Summer school/intensive course (joint activities):** Establishment of a joint summer school or intensive course is recommended as a way to bring the students together from all five institutions to stimulate the N5T identity and promote networking among students.

An N5T joint programme is run by a consortium representing at least three institutions. One institution will act as the coordinating university and will coordinate the admission process. There should be a minimum commitment to the programme for at least five years.

2 Resources and responsibilities

Collaboration on N5T joint programmes is governed by a consortium agreement (plus annexes and/or protocols) that specifies the principles for organisational, administrative and legal aspects of the collaboration.

2.1 Human resources

In order to ensure the feasibility of the project and the establishment of a well-functioning programme, it is considered crucial to involve both academic as well as administrative representatives in the programme consortium. A consortium should thus include key professors and key administrative staff working together and as separate project groups reporting to each other to ensure a continued dialogue between contents and the legal/administrative framework.

2.2 Financial resources

Partners in a consortium are expected to carry costs for running the programmes themselves as part of their N5T membership and existing framework. However, it is possible to receive financial support for certain joint student activities (see annex 1).

2.3 Division of tasks and responsibilities

Each N5T joint master programme is governed by a consortium headed by a co-ordinating university. The consortium will act as Programme Board.

The Programme Board is responsible for:

- overseeing the implementation of the programme,
- a strategic plan for the continuous development of the programme and ambitions for the academic partnership,
- defining the learning outcomes of the joint programme,
- ensuring that the teaching offered within the programme is delivered to the highest academic standard,
- planning and implementing joint quality assurance activities, which will supplement the national and institutional quality work,
- seeking external funding opportunities e.g. for student mobility costs,
- agreeing upon and ensuring consensus on the structure of the programme and on possible changes in the content of the programme, as well as on changes in the Consortium,
- evaluating the programme coordination and propose changes with regards to the division of responsibilities,
- reviewing the admission criteria,
- maintaining dialogue with major stakeholders and industry with regards to candidates' competence profiles, labour market needs and scholarship possibilities,
- defining a marketing strategy for the programme and contributing accordingly in marketing activities.

The Consortium Coordinator is responsible for:

- coordinating and managing the programme in collaboration with the partners, including the convening of Programme Board meetings,
- coordinating the student admissions, including organizing the annual admission meeting and ensuring joint admission procedure,
- management of external project funding,
- communication and reporting to the Consortium partners, N5T governing bodies and programme sponsors,
- updating and sharing a register of students, thesis supervisors and student statistics,
- updating the appendixes to this agreement and the corresponding information on the website,
- coordinating the agreed N5T quality assurance activities.

All Consortium members are responsible for:

- ensuring that the programme receives accreditation according to national standards, where applicable,
- organizing teaching according to the curriculum defined by the consortium,
- providing academic support, counselling and tutoring for all students,
- providing possibilities for students to attend courses in the national language on the same basis as other international students (if offered),
- appointing one academic and one administrative coordinator,
- sending appropriate academic and administrative representatives to the admission meetings,
- performing continuous evaluation of the Programme according to the institutional and Programme specific quality assurance procedures,
- providing updated lists of enrolled students to the Coordinator,
- ensuring that information on the programme webpages are correct.

3 Programme structure

3.1 Mobility tracks (1+1)

The standard model applied within N5T for double degrees is a study structure where students spend one year in each of the two degree-awarding institutions. That is, 60 ECTS coursework in the first year/university 1 and 30 ECTS coursework + 30 ECTS Thesis work in the second year/university 2. Students will thus have to choose between combinations of institutions offering specified programme components. The model implies the possibility of having multiple entry institutions. In order to ensure integration of the programme components and learning progression, the programme must be structured with clear competence profiles and learning outcomes for each of the mobility tracks proposed at three levels: Course level (as specified in the course base of each institution), Programme level and Study track level.

3.2 Exam regulations and re-sits

Exams and re-sits take place according to local rules and procedures. There are local rules regarding the improvement of grades and complaints and such issues are settled according to local procedures. The consortium as such will not arrange any extra exams.

Re-sits can be organized remotely provided that it can be done within the rules and procedures of the "host" institution. The student must contact the "host" institution for eventual arrangement at least one month prior to the exam date. Expenses and travelling are covered by the student in case he or she has to travel back for the exam.

4 Master's thesis

Co-supervision of thesis work serves a two-fold purpose:

- a) In order to issue a diploma, all five institutions require that thesis work is conducted with a supervisor from the two institutions in each case (one main supervisor and a co-supervisor).
- b) Thesis work conducted with supervision from each of the two degree awarding institutions involved in the study track is a way to ensure integration of the programme components.

The aim is to issue one common grade for the thesis work. Co-supervision will be governed by a set of guidelines in order to provide supervisors and students with a clear framework (see annex 2 and 3).

4.1 Institution specific requirements

Each partner institution has specific requirements e.g. regarding thesis defence, supervisors and external examiner. These are rules that institutions cannot deviate from as they are set by national legislation. Institutions also have different traditions with regard to thesis work and assessment, e.g. regarding the theoretical level versus practical/empirical contents of the thesis work. A mapping of rules and procedures for thesis work at all N5T institutions is attached in annex 4.

When planning their studies, it is important that the students take compulsory elements into account such as specific exams that are required in order to graduate (e.g. "Maturity Test" at Aalto).

4.2. Guidelines for the consortium

The consortium should agree on how to proceed in order to achieve integrated procedures and agree on a thesis process for each study track/combination of supervision in order to avoid uncertainties e.g. regarding the assessment process and criteria.

4.3 Students' guidelines

For the students the following issues should be addressed clearly:

- who are the potential supervisors at each institution,
- who is the main supervisor,
- what are the roles of the supervisors and what can the student expect from them,
- agreement of the topic by the supervisors from each of the two degree awarding institutions,
- local rules of the two partner institutions concerning the thesis procedure,
- possibilities to conduct the thesis in industry,
- students' responsibilities regarding deadlines (i.e. joint deadline for submission of the thesis) and regular communication with the supervisor(s),
- presentation of the thesis according to local rules (see mapping in annex 4) and timing of the presentation which must be agreed with the two institutions concerned,
- the language of the thesis and defence (English),
- costs to be paid by the student (e.g. casing),
- compulsory elements that are required in order to graduate (e.g. "Maturity Test" at Aalto).

Annex 2 features template guidelines for students on joint thesis procedures and annex 4 a mapping of rules and procedures at each institution.

4.4 Guidelines for co-supervision of thesis work

The following issues should be discussed and agreed on between the involved supervisors and institutions:

- timing of the thesis,
- topic of the thesis,
- language,
- supervision of the thesis (division of tasks between the supervisors, physical meetings, etc),
- thesis presentation/defence,
- assessment of the thesis,
- assessment time.

Annex 3 features template guidelines for supervisors on joint thesis procedures and annex 4 a mapping of rules and procedures at each institution.

4.5 Thesis agreement template

When initiating thesis work, a confirmation of thesis form must be filled in by the student in collaboration with his/her supervisor. The form must subsequently be sent to the programme coordinator.

Annex 5 contains a template thesis agreement form.

4.6 Assessment of the thesis

The consortium and the supervisors, in particular, should agree on the principles for the evaluation of the thesis in each case. The evaluation criteria differ between institutions and some institutions are required to use an external censor or require an oral thesis defence/presentation which again may affect the given mark (e.g. 15%). If an oral defence is compulsory at one institution, the supervisor or evaluator at the other institution must participate on this occasion. In cases where there is no requirement for a thesis presentation, a joint presentation must be organized with the participation of both supervisors. The grade will often be fixed at this occasion and the defence itself may affect the grade. Some institutions have strong restrictions on time limits for thesis assessment and it is recommended that the two institution supervisors agree on the maximum time for the evaluation.

The following scaling table shall be used for evaluation of thesis:

ECTS Marks	Aalto	Chalmers	DTU	KTH	NTNU	
A	5 excellent	Pass or Fail only	12	Pass or	A	
B	4 very good		10		Fail	B
C	3 good		7			C
D	2 very satisfactory		4	only	D	
E	1 satisfactory		02 (passable)		E	
Fx/F	0 failed		00 (Fx) or -3 (F)		Fx/F	

5 Student Admission

All students are registered as degree-seeking students at the institution where they commence their studies. For the second year, students are *also* registered as degree-seeking students at the second institution offering their chosen study track. Students enrolled in the program will be subject to the regulations and procedures of the institution at which they follow courses and sit for examinations in a given semester. They shall enjoy the same rights and privileges granted to the students of the host institution and will hence be provided with the same academic resources and support services that are available to all students at that institution.

5.1 Admission procedure

Admission is handled as a joint effort by all universities in the consortium according to joint admission criteria with students applying to the lead university, and one common deadline is preferred.

Furthermore, the admission procedures take the following aspects into consideration:

- Selection criteria
- Selection methods (application form, recommendations, statements of purpose)
- Joint application and selection materials
- Organization of the application and selection process (incl. agreement on and coordination of the timetables of partner institutions).
- Joint assessment of applicants
- Intake quota for each institution

Complaints concerning the admission procedure should be addressed to the institution in charge of the application process.

All applications are academically evaluated by the consortium partner universities. For candidates fulfilling the requirements, a ranking of students is done on the basis of the student's academic achievements. Admission is based on a joint decision by the programme board.

5.2 English language requirements

The rectors have approved that the N5T consortia will apply the highest minimum language test scores and have thus agreed on specific test and score-levels which have been approved by all five institutions within the framework of the N5T working group on joint N5T master programmes. They meet the highest minimum standards of the five institutions and can thus be applied by all partners (see annex 6).

5.3 Application process

Applicants apply through the local application portals with a subsequent joint academic evaluation process taking place. The process consists of the following steps:

- The applicants apply to their start university using the local admission system.

- Pre-screening by local admin staff using common pre-screening criteria
- Local academic staff screens applications and shortlist eligible candidates.
- The Consortium Admission Committee meets and reviews all shortlisted candidates.
- Admission/rejection letters sent out by local admission officer.

5.4 Institution specific procedures

It is possible to apply institution-specific requirements regarding e.g. documentation or required type of bachelor degree in cases where these additional requirements do not conflict with the overall requirements and exemptions agreed on by the consortium.

5.5 Student Services

Joint programmes must offer a coordinated service to students in order for them to gain the experience of a coherent programme with a smooth transition from one institution to the next. A separate student handbook has been developed where these issues are clarified. University-specific information can be found on the website of each university.

5.6 Academic supervision

In order to ensure that the programme is coherent for the individual student, all students must prepare a study plan as part of their application (in the motivation letter) indicating which study track the student aims to pursue and which university the student will attend in the second year. Upon enrolment, the programme coordinator will assign two academic contact persons to each student, one from each of the two degree awarding institutions.

5.7 Administrative procedures to facilitate mobility

5.7.1 Transfer from University 1 to University 2

Students are contacted during their 2nd semester by members of the Joint Master Programme Working Group with information on the transfer process from university 1 to university 2. This transfer is done in coordination with programme coordinators from university 1 and university 2. The transfer process should begin in a timely manner that does not put the student in a disadvantage to regular master students, i.e. applying for accommodation, register for courses etc.

5.7.2 Credit transfer

Credit transfer from university 1 to university 2

University 2 enrolls the students and requests grade transcripts from university 1. Each institution must specify the unit responsible for carrying out the credit transfer. See annex 7 for credit system, grading scale and conversion table.

Credit transfer from university 2 to university 1, including graduation:

The programme coordinator is in charge of keeping track of students' thesis work and their graduation status. The local coordinators will be in charge of coordinating this process and inform the relevant

administrative units that the student is ready to graduate and that credits must be transferred from university 2 to university 1. See annex 7 for credit system, grading scale and conversion table.

5.7.3 Tuition fees

Aalto, Chalmers, DTU and KTH charge tuition fees to non-EU students. The two institutions involved in the students study track both have to register the student as a full degree student during the second year of studies in order to be able to issue a double degree. Thus the student is double registered, although he/she is physically located in only one institution. The institutions involved will have to ensure that the student is not charged double tuition fees. Institution-specific rules regarding tuition fees can be found in annex 8.

6 Degree

All consortium partners are recognized degree awarding institutions and a student graduating from an N5T joint master programme will receive two MSc degrees (from University 1 and University 2 respectively) including diploma supplements and an insert (see annex 9).

The Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. Programme details and individual grades are described in the degree certificate or the official transcript. The student handbook explains the different procedures on how to obtain the diploma from the 5 universities.

6.1 Diploma Supplement

All institutions issue the Diploma Supplement with an additional explanatory text:

Text example:

The Nordic Master programme is a joint programme organised within the framework of the Nordic Five Tech university alliance: Aalto University, Finland, Chalmers University of Technology, (Chalmers Tekniska Högskola) Sweden, The Royal Institute of technology (KTH), Sweden, the Norwegian University of Science and Technology (NTNU), Norway and the Technical University of Denmark (DTU), Denmark. Upon completion, the students are awarded two officially recognised Master of Science degrees: one from each university where they studied (double degree).

6.2 Insert

A N5T insert for the diploma has been developed. The insert is to be issued by both institutions involved in the study track of the student (see annex 10).

7 Marketing of the Programmes

Internal and external marketing of the N5T Joint master's programmes is a joint and ongoing effort. The Working Group for Communication has produced a Nordic Five Tech communication plan which outlines the main goals, target groups and focus areas for existing and future communication efforts in the alliance. The marketing of the joint master's programmes is based on a number of crosscutting joint communication efforts as well as the inclusion of the N5T Joint master's programmes in the recruitment and marketing efforts of each partner university. To underpin the N5T communication plan, a multi-annual communication task overview is produced. The overview lists both local and joint marketing and recruitment efforts for the coming years.

7.1 Websites

The Working Group for Communication has created guidelines for websites related to the Nordic Five Tech Joint master's programmes. The guidelines describe suggestions for headlines, content and best practice. The websites related to the N5T Joint master's programmes are divided into two types: A main programme page which the coordinating university is responsible for and local university page which describes the Joint master's programme in a short version plus links to the main page for more details.

8 Quality Assurance, monitoring and evaluation

Quality assurance is based both on the ongoing national and university level practices and policies as well as on specific quality assurance activities agreed upon and implemented by the N5T Programme Board. Particular emphasis is given to joint elements and progression towards the learning outcomes of the joint programme.

8.1 Programme level

Programme specific quality assurance instruments include:

- annual programme reviews conducted by the programme board with input from student and graduate surveys,
- a more comprehensive review one year before expiration of the contract period.

The consortium partners could develop joint feedback forms for students e.g. semester evaluations and global programme evaluations addressing issues like transfer/mobility between institutions, learning progression and programme integration.

The quality assurance activities, results and actions are documented for university quality assurance purposes and reported to the N5T Committee.

8.2 Institution level

All N5T universities have internal quality assurance mechanisms (see annex 11). It is important that the joint programme strives to profit from these mechanisms. It is recommended to elaborate a reporting procedure at the end of each semester, where each university representative gathers course evaluations and specify issues of relevance for the joint programme and actions taken/planned for.

9 Programme implementation

9.1 Consortium Agreement

Collaboration on N5T joint programmes are governed by a consortium agreement that specifies the principles for organisational, administrative and legal aspects of the collaboration. The Consortium Agreement is supplemented with annexes and protocols specifying common procedures in further detail and must be signed before the first student intake.

9.2 Establishment or renewal of programmes

Decisions on the establishment or renewal of joint N5T programmes are taken by the N5T Rectors.

9.3 Joint admission criteria

It is important to have consensus on the admission criteria in order to be able to communicate them clearly to prospective students and for assessing applications, where unforeseen differences between assessment criteria in the five institutions may surface with a risk to complicate the admission process unnecessarily.

When agreeing on joint admission criteria it is N5T policy to settle on the highest minimum standards.

Requirements include:

- General and specific criteria for eligibility (required prior education, language skills, work or work placement experience) and any other possible requirements,
- The fields in which qualifications conforming to the level of a university Bachelor's degree should have been completed in order to be deemed eligible,
- National statutes and institutional admission criteria must also be complied with in terms of student selection.

As a rule, it will be important to formulate more detailed requirements regarding prerequisites in e.g. mathematics and statistics. Examples of more detailed requirements are provided with the Nordic Master in Maritime Engineering as an example:

- A BSc degree corresponding to a minimum 180 ECTS credits in the following fields:
(there might be discrepancies between institutions in this regard)
- Applicants that are enrolled in an integrated five year degree with no bachelor level.....
- A BEng inEngineering is accepted for start at... (there might be discrepancies between institutions in this regard)
- Applicants with a BEng in ..., or a BSc or BEng in ,..... will be considered on an individual basis.
- The applicant's qualifications must include a strong working knowledge of mathematics and and applicants must document that they have fulfilled the following minimum requirements:
Example of more detailed requirements from the Nordic Master in Maritime Engineering:

- Mathematics: 25 ECTS including linear algebra, calculus and differential equations.
- Statistics and probability theory: 5 ECTS. Students without this qualification must be prepared to complete their curriculum during the first year.
- Statics, mechanical vibrations, and strength of materials: 10-15 ECTS
- Fluid mechanics: min. 5 ECTS

Moreover, the applicant must have sufficient qualifications within numerical methods and elementary programming using e.g. MATLAB or a similar programming language.

- Applicants with a Polytechnic (FI), Högskoleingenör (SE) and Diplomingeniør (DK) degree may be expected to do extra course work to qualify for the programme.

Annex 1

N5T JMP Joint Student Activity. Rotation plan adopted by the N5T Committee 2 December 2016

The N5T JMPs are encouraged to organize joint student activities. Institutional support for the funding of such activities was endorsed by the N5T Rectors in June 2016 with the objective to strengthen student satisfaction and attachment to the N5T programme and stimulate contact between the departments involved. Operational guidelines:

- To facilitate planning and budgeting, the responsibility to host the joint student activity shall rotate between the consortium universities according to a long-term plan adopted by the N5T Committee.
- The host university shall cover the direct expenses of up to 10 000 Euros depending on the number of students participating. Host university funding is limited to student activities (such as a joint welcome programme, winter/summer school, grand exercise/research workshop for students) and the reimbursement of direct costs relating to student travel, local accommodation, meals and excursions. It is recommended that the host university purchase the students' tickets in order to reduce transactions between institutions and the students' need of a travel advance.
- The budget of the joint activity shall be approved by the N5T Committee member of the host university (or the university unit who is given the responsibility for the institutional funding), and may only exceed the sum stipulated by the Rectors provided it is the most realistic low-cost budget given the number of students participating.

Rotation plan for hosting the JMPs joint student activities within the agreed consortium periods:

Academic year (Budget year)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
ISEE winter school		NTNU 2014	NTNU 2015	Aalto 2016	Chalmers 2017	KTH 2018	DTU 2019	NTNU 2020	Aalto 2021	Chalmers 2022	KTH 2023
NMME welcome weekend	Aalto 2012	DTU 2013	KTH 2014	Chalmers 2015	NTNU 2016	DTU 2017	Aalto 2018	KTH 2019	Chalmers 2020	NTNU 2021	
N5PolTech get-together weekend					NTNU 2016	DTU 2017	KTH 2018	Aalto 2019			
<i>Enviro5Tech</i>						KTH 2017	NTNU 2018	Chalmers 2019	Aalto 2020	DTU 2021	
<i>Cold Climate Engineering</i>						NTNU 2017	Aalto 2018	DTU 2019	NTNU 2020		

Annex 2

Template guidelines for students in N5T Master Programmes on joint thesis procedures

Adopted from the Erasmus Mundus programme, NordSecMob

The following procedures are recommended for students doing a joint thesis as part of a N5T Master Programme. The thesis is done under joint supervision by University 1 and University 2. The topic must be agreed upon by the supervisors of University 1 and 2.

1) Thesis agreement

By November in your second study year, you should contact one professor from each of the two universities in your study track, in order to discuss the thesis procedure, timing, topic and methods to be applied. You are advised to fill in a joint thesis agreement¹ to be signed by both supervisors and sent to the N5T programme co-ordinator. By signing the thesis agreement form, you make sure that the supervisors are aware of the N5T programme specific features and agree to follow the recommendations given by the consortium regarding the joint supervision.

The thesis agreement addresses the following aspects, which you must discuss and agree on in collaboration with your supervisors:

a) Topic and method(s) applied

The topic and the method(s) applied must be agreed upon by both University 1 (first year of study) and University 2 (second year of study) professors as well as the Programme Board. The thesis can be done in industry (for ex. in a company), if both supervisors/universities agree on that.

b) Roles

In the thesis agreement, you must indicate the contact data for the two supervisors involved in the thesis project, including their roles (who is the main supervisor). As a rule, a professor of the University 2 is the main supervisor, but upon agreement, a professor of the University 1 may become the main supervisor.

It is important that you discuss your expectations to the supervision process with your supervisors and agree on reporting procedures and a meeting schedule.

c) Timing

You must find out the local rules of two partner universities concerning the thesis procedure and respect the deadlines given by University 1 and 2 and inform your supervisors informed about these aspects.

¹ See template in Annex 6 in the N5T Handbook on Joint Master Programmes

Based on this information, you and your supervisors agree on a timeline for the thesis, including major milestones and deadline for submission. The thesis work should be started in January-February at the latest (second study year) and you should submit it for assessment at the end of June/July at the latest but always following the local rules of the two universities.

It is your responsibility to make sure that all parties are aware of the given deadlines and to communicate regularly with the supervisors.

2) Presentation of thesis

Presentation of the thesis must be done according to the rules of each partner university:

Presentation of thesis

Presentation of thesis must be done according to the rules of each partner university:

- Aalto: presentation of the thesis must be done either at Aalto or at partner university
- Chalmers: presentation of the thesis must be done either at Chalmers or at partner university
- DTU: a thesis defence is required and counts towards the final grade
- KTH: presentation of the thesis must be done either at KTH or at partner university
- NTNU: no presentation required

You must agree with supervisors on the timing of the presentation, but it should take place in June or August at the latest. Both supervisors must participate to this event. In cases where it is not required to do a thesis presentation, a joint presentation must be organised with the participation of both supervisors.

3) Steps for the students

a) Before initiating the thesis process you must make sure that you have completed all your remaining courses by the end of February (second study year). If you have remaining courses, you must get in contact with the local programme coordinator regarding the missing courses and submit an updated study plan to both the programme coordinator and the local coordinator on how you intend to complete the missing courses and when (course code and name, date of re-exam etc.)

b) Fill in a thesis agreement form

The form will be distributed to all students by the programme coordinator in November (semester 3) and must be returned to the supervisors and the programme coordinator by the end of February the subsequent year (semester 4).

c) Progress report:

By mid-March, you must submit an interim report on the progress of your thesis work to both of your supervisors (University 1 and University 2).

Annex 3

Guidelines on joint thesis procedures for supervisors in N5T Master Programmes

N5T Joint Master Programmes

“X”- Programme is a joint master programme offered by the N5T university alliance. The programme is a full-time Master of Science Degree Programme with duration of two years.

During these two years, students will study at two of the five Nordic partner universities:

- Aalto University, Finland
- Chalmers tekniska högskola, Sweden
- The Technical University of Denmark (DTU)
- The Royal Institute of Technology (KTH) in Sweden
- The Norwegian University of Science and Technology (NTNU)

Joint N5T Master Programmes are usually designed as double degree programmes.

For further information, please refer to the N5T homepage: www.nordicfivetech.org

Joint thesis procedure

The thesis is usually written during the fourth (=spring) semester of the two-year course. This programme has agreed on joint supervision of thesis which means that there are always two supervisors for the thesis from the two universities. The local rules for supervision and evaluation of thesis differentiate². Building up a joint programme across institutions is very challenging and these guidelines are prepared to support the academic and administrative staff involved in the joint thesis procedure and in order to ensure a smooth graduation process. The programme strives to fulfil the expectations of the N5T university alliance regarding the length of the programme (2 year Master-programme) and therefore, it is a goal to complete the graduation of the students in time. For this reason the evaluation of thesis should be completed in August at the latest.

Supervision and Assessment

When involved in supervision on joint thesis work, supervisors are recommended to follow the following principles regarding thesis supervision and assessment:

Supervision

The thesis will be supervised by University 1 and University 2 according to the local procedures and regulations of the respective institutions. The intention of N5T joint study programmes is that both supervisors communicate and collaborate regularly on the supervision in order to ensure an integrated learning outcome for the student, combining learning from both the first and the second year of study.

² For further information on thesis procedures at the five universities please refer to the mapping of thesis regulations, annex 3 of the N5T Handbook on Joint Master Programmes

The student is responsible for keeping both supervisors updated of the progress of the thesis. The main supervisor or the local programme coordinator is responsible for keeping the programme coordinator updated on the student's progress.

It is recommended to discuss expectations for supervision from the two supervisors and their respective roles in the process and agree on a meeting schedule before starting the project.

Thesis agreement

Supervisors involved in a joint thesis procedure are advised to fill in a joint thesis agreement³ in collaboration with the student and reach agreement on the following aspects:

Topic and method(s) applied

The topic and the method(s) applied must be agreed upon by both University 1 (first year of study) and University 2 (second year of study) professors as well as the Programme Board.

Roles

As a rule, a professor of the University 2 is the main supervisor, but upon agreement, a professor of the University 1 may become the main supervisor. The students and the supervisors must discuss expectations and agree on reporting procedures and a meeting schedule.

Timing

The student and the supervisors must agree on a timeline for the thesis, including major milestones and deadline for submission. The thesis work should be started in January-February at the latest (second study year) and the student should submit it for assessment at the end of June/July at the latest but always following the local rules of the two universities.

Assessment

It is a goal that the student is given one grade for the thesis. As the thesis assessment criteria differ between the respective institutions, it is recommended that the supervisors stay in close contact and discuss the assessment criteria extensively both when designing the thesis project and during the process. In addition, the possible effect of the presentation/defence of the thesis must be taken into account. If there is a risk of a total rejection of the thesis, the student must be informed early enough so that the student has a possibility to improve the thesis before the final submission.

Presentation of thesis

The presentation of thesis must be done according to each partner university rules:

- Aalto: presentation of the thesis must be done either at Aalto or at partner university
- Chalmers: presentation of the thesis must be done either at Chalmers or at partner university
- DTU: a thesis defence is required and counts towards the final grade.
- KTH: presentation of the thesis must be done either at KTH or at partner university
- NTNU: no presentation required

The timing of the presentation/defence must be agreed on between the two supervisors and should normally take place in June. In case of a compulsory thesis defence, the partner university supervisor

³ See template in Annex 6 in the N5T Handbook on Joint Master Programmes

or assessor must participate as the grade will often also be decided and the defence itself will count in the overall assessment (e.g. 10%). In cases where it is not required to do a thesis presentation, a joint presentation must be organised with the participation of both supervisors.

Assessment time

The N5T universities have different rules regarding timelines for thesis assessment. In order to comply with these differing rules, it is recommended to follow the shortest timeline of the two universities. The general rule is a maximum assessment time of two months after submission of the thesis. This means that the assessment should be completed by mid-August. It is strongly recommended that the two supervisors of the thesis communicate and collaborate regularly with each other during the assessment period in the spirit of the N5T university alliance.

Annex 4

Mapping of N5T regulations for master thesis procedures

The following table brings up the local practices related to the thesis and graduation procedures. All these details are to be discussed when planning for the joint supervision of the thesis and possibly the joint evaluation of the thesis.

1) Location of thesis (university/company), administrative steps for registration of with topic

Requirements and possibilities	AALTO	Chalmers	DTU	KTH	NTNU
Administrative steps	<p>Confirmation of the topic</p> <p>Evaluation of the thesis at the meeting of C committee</p> <p>The student must also pass a so-called maturity test in order to graduate from Aalto</p>	<p>Student applies for the topic.</p>	<p>Students fill in a thesis agreement form (topic, methods applied, deadline, IPR if necessary), that must be approved by the programme coordinator.</p> <p>Registration of thesis subject and deadline in STADS.</p> <p>Students must apply formally for an exemption in cases where they submit more than three weeks after the deadline agreed on.</p>	<p>Registration of thesis project</p>	<p>Register thesis in study administrative system</p>
Physical presence required at university / country during thesis procedure	No	No	No	No	No

Thesis at university possible (without salary)	Yes	Yes	Yes	Yes	Yes
Thesis in company with salary	Yes	Yes	Yes	Yes	No
Thesis in company without salary	Yes	Yes	Yes	Yes	Yes
Regular meetings with supervisor	Yes, by agreement	Yes, by agreement	Yes, by agreement	No, monitoring by website	Yes, by email or meetings
Presentation of thesis/defense at university	Yes, but not necessarily physically present	Yes, physical presence if thesis done at Chalmers	Yes, but not necessarily physically present	Yes, but not necessarily physically present	No
Presentation/defense via videoconference possible	Yes	No	Yes	Yes	N/A
Special	Thesis is always supervised and evaluated by Aalto professor at least formally The student must also pass a so-called maturity test in order to graduate from Aalto	In order to obtain a pass for a degree project the student must have acted as an "opponent" on another degree project, and participate in 2 other thesis seminars.	Thesis is formally always (co-) supervised by a DTU professor.		

2) Thesis supervision, assessment and graduation

	Aalto	Chalmers	DTU	KTH	NTNU
Thesis supervisors	Supervisor = Aalto professor (+possibly instructor)	Supervisor + examiner. If thesis is done in company, responsible supervisor is also appointed there. No external examiner.	Supervisor + external censor	Supervisor	Supervisor Instructor + external censor

Submission of thesis (physical form)	Electronical form: All approved master's theses and their metadata are stored in the Aaltodoc publication archive. Cased in black hard covers – two copies: one for professor and one for library	Printed at Chalmers printing Office following special template. Often printed in 20 copies.	Student must check number of copies required (depending on number of supervisors, external censor etc.)	Special front page, two copies, yellow+white cover, covering is done by KTH	Two hard copies, first page: both supervisors are mentioned on cover page, white+green cover
Grade is given by	Aalto professor writes a statement and the statement is processed in the X committee	Examiner + supervisor (professor, regular staff) Grade is Pass or Fail.	External censor and supervisor. External censor cannot be employed at DTU -must appear at DTU censor list - cannot have taken part in supervision, - Receives a honorarium from DTU	Examiner (+supervisor) (professor, regular staff)	External censor + supervisor = - Can't be employed at NTNU - *Must have obtained a grade at least similar to a master's degree, and be "professional" within the particular area -Can't have taken part in lectures/supervision - Receives a honorarium from NTNU
Assessment period	Max of 1 month, usually about 2-3 weeks: statement should be ready by mid-August at the latest	No maximum time	Max. 4 weeks after the submission of thesis	No fixed times, - can be asked to evaluate in max 4 weeks	Maximum of 3 months after submission of deadline
Graduation date	Date of the meeting of the X committee	The date when the certificate was	The date the grade of the last exam is	The date when the last course	The date of *submission * of the

		issued. The date when the last credit was awarded is also reported in the diploma.	given.	will be registered. As the thesis work will be the last course that will be the date.	master's thesis, or the date for the last exam.
Graduation ceremonies	Graduation ceremonies organized by the school (monthly or every second month)	Chalmers Ceremony for Conferment of Degree Diplomas in May and December.	Graduation ceremony (dimmitend reception) twice a year (March and October)	KTH Ceremony for Conferment of Degree Diplomas In May and December.	
Degree certificate delivery	In graduation ceremonies or degree certificate can be picked up from the office	As soon as possible after the issuing of the certificate.	The diploma is sent to the student. The student receives a wall diploma at the graduation ceremony.	The degree will be sent to the student.	The degree certificates are signed by the Dean of the Faculty within one month (at the earliest) after the grade of the thesis is reported to the exams office.
Graduation with distinction	If course GPA minimum 4,00 and thesis grade minimum thesis 4 (B)	No	DTU has honours and elite programmes but at the moment no distinctions are awarded based on GPA performance.	No	No

Annex 5

N5T Joint Master Programme thesis agreement form

Master's Programme in _____

PERSONAL DATA OF THE STUDENT			
Name			
University 1 (first year)	Student number	Total of credit units completed	Total of credits
University 2 (second year)	Student number	Total of credit units completed	
Present mailing address, country of residence during thesis writing			
E-mail address		Phone number	

SUPERVISORS AND INSTRUCTORS OF THE MASTER'S THESIS
Name, E-mail or phone number of the supervisor (professor) of the Master's thesis / University 1 Main supervisor <input type="checkbox"/>
Name, degree title (M.Sc/PhD etc.), name of the university/company/research institute, E-mail or phone number of the instructor or other contact person of the Master's thesis / (if applicable)

Name, E-mail or phone number of the supervisor (professor) of the Master's thesis / University 2 Main supervisor <input type="checkbox"/>
Name, degree title (M.Sc/PhD etc.), name of the university/company/research institute, E-mail or phone number of the instructor or other contact person of the Master's thesis / (if applicable)

TOPIC, METHODS AND LANGUAGE
Topic of the Master's thesis and description of methods applied
Language of the Master's thesis: English

THESIS SCHEDULE AND TIMELINE

Deadline for delivery:
Major milestones and timing:
Reporting procedure and meetings agreed on between the student and the supervisors:

SIGNATURE OF THE STUDENT	
Date / 20	<input type="checkbox"/> Yes, I have read and understood the instructions of the thesis process and contacted and informed both of my supervisors.
	Signature
	Name in block letters

STATEMENT OF THE SUPERVISOR OF UNIVERSITY 1	
I approve of the suggested topic of the Master's thesis	
The Master's thesis has to be returned at the latest ____ / ____ 20____	
Date / 20	<input type="checkbox"/> Yes, I have received and read the recommendations for supervisors.
	Signature
	Name in block letters

STATEMENT OF THE SUPERVISOR OF UNIVERSITY 2	
I approve of the suggested topic of the Master's thesis	
The Master's thesis has to be returned at the latest ____ / ____ 20____	
Date / 20	<input type="checkbox"/> Yes, I have received and read the recommendations for supervisors.
	Signature
	Name in block letters

The signed form has to be returned to **N.N.** (N5T programme co-ordinator) by **X.X.XXXX**.
Cc: main supervisor and joint supervisor

Annex 6

English Language requirements

TOEFL:

Paper-based: 580 (written section grade 4,5)

Computer-based test: 237 (essay writing grade 4,5)

Internet-based test: 92 (written section grade 22)

IELTS:

6.5, no section lower than 5.5 (only IELTS Academic Training accepted).

English language test exemptions:

1. Applicants who have completed a university degree instructed in English at a university that is physically located in one of the following countries:

- USA
- Canada
- UK
- Ireland
- Australia
- New Zealand

2. Applicants who have completed at least a 3-year degree instructed in English in an EU/EEA country.

3. In some cases applicants with upper secondary education from a Nordic country.

Annex 7

ECTS, grading scale and conversion table

Aalto University uses the credit system equal to ECTS credits. The grading scale is from 1 to 5. Also, grades pass/fail are used.

NTNU uses a letter based credit system in correspondence with ECTS. Grades are on a scale from A-F (A is best, F – failed). NTNU also uses the scale Passed/Not Passed.

KTH uses higher education credits where 1 higher education credit equals 1 ECTS credit. The grading scale at KTH is A-Excellent, B-Very Good, C-Good, D-Satisfactory, E-Sufficient, F-Fail.

Chalmers uses higher education credits where 1 higher education credit equals 1 ECTS credit.: The grading scale at Chalmers is 3 (good), 4 (very good), 5 (excellent). The lowest pass grade is three (3). Also “passed/not passed” is used.

DTU: uses the 7-grade scale for grades, which is comparable with the ECTS-point scale. DTU also uses the “passed/not passed” evaluation.

The following scaling table shall be used when transferring the credits:

ECTS	Aalto	Chalmers	DTU	KTH	NTNU
A, best 10%	5	5	12	A	A, 90 – 100
B, next 25%	4	4	10	B	B, 80 - 89
C, next 30%	3	4	7	C	C, 60 - 79
D, next 25%	2	3	4	D	D, 50 - 59
E, next 10%	1	3	02	E	E, 40 - 49
F, fail	0, failed	fail	00, -3	F	F, 0 - 39

Annex 8

Tuition fees

The following section explains the procedure of each institution:

Aalto

At Aalto students pay tuition fees on a yearly basis <https://www.aalto.fi/admission-services/scholarships-and-tuition-fees>. Invoices are sent by e-mail to fee-paying Non-EU students. Non-EU citizens will be registered as fee-paying students in Aalto University's study administrative system for 2 years but will only receive invoices for 1st or 2nd year.

Chalmers

Students that come to Chalmers in year 1 and go somewhere else for year 2, will be registered at Chalmers year 1 but not year 2. Instead, they will be considered as "exchange" students in year 2. But for them to get the double degree, Chalmers has to get the transcript of records for credit transfer from year 2. Status as "exchange" students in year 2 instead of "Master's" students for those students who will study abroad is for internal purposes so that they will not be charged double tuition fees. If they are not registered and studying at Chalmers, they do not have to pay fees.

DTU

AT DTU, students pay tuition fees on a semester basis. Instructions on how to pay the tuition fee are sent by the Office of International Education, this is a manual process. Non-EU citizens will be registered as fee-paying students in DTU's study administrative system for all 4 semesters but will only receive invoices for semester 1 and 2, or semester 3 and 4.

KTH

KTH charges tuition fees for non EU-students. If the students are registered as program students they will be charged a tuition fee.

NTNU

No tuition fees.

Annex 9

Degrees provided

All consortium partners are recognized degree awarding institutions. A double degree will be awarded. N5T master programme leads to two officially recognized Master of Science-degrees (120 ECTS) issued by the University 1 and University 2.

Institution	Title of Degree Awarded	Legal framework
Aalto University	Diplomi-insinööri Master of Science (Technology) Master of Science (Architecture) Master of Science (Landscape Architecture)	Decree of the Council of State on University Degrees (1136/2009)
Chalmers	Master of Science (two years), title of degree programme and title of main area	Higher Education Ordinance (SFS), 1993: 792 in § 2
DTU	Cand. Polyt. Master of Science in Engineering, title of degree programme and title of specialization	Act on Universities, Act BEK nr 1328 af 15/11/2016 and related ministerial orders
KTH	Master of Science (two years)	Higher Education Ordinance, 2000:1057
NTNU	MSc in Engineering”, title of degree programme and title of specialisation.	Act relating to University and University Colleges 2005

The consortium uses the Diploma Supplement which will be attached to the degree certificate. The Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. Programme details (modules, courses) and individual grades/marks are described in the Degree Certificate/Official transcript.

NORDIC FIVE TECH

This insert is conferred to students who have completed one of the joint master's programmes offered by the Nordic Five Tech university alliance. The programmes are supported by the Nordic Council of Ministers and have been selected on the basis of Nordic excellence.

Nordic Five Tech

Nordic Five Tech (N5T) is an exclusive strategic alliance of the five leading technical universities in the Nordic countries:

- Aalto University, Finland
- Chalmers University of Technology, Sweden
- Norwegian University of Science and Technology (NTNU), Norway
- KTH Royal Institute of Technology, Sweden
- Technical University of Denmark (DTU), Denmark

The alliance was established in November 2006 with the aim of utilizing shared and complementary strengths within education, research and innovation.

Nordic Master Programmes

It is a strategic goal of Nordic Five Tech to become the Nordic check point for international M.Sc. students. The joint master's programmes are defined within N5T areas of expertise where the universities have a strong capacity and long standing tradition within research and education. Thus, a graduate from a N5T programme has had the opportunity to benefit from the very best of N5T by spending an academic year at two excellent universities.

Programme Structure

Students graduating from the N5T Master Programmes have followed a study track with a clear competence profile. Progression in learning and integration of the programme components between the universities is ensured by the predefined study tracks and by co-supervision of the final thesis work with one professor from each of the two degree awarding institutions involved in the study track.

Degrees

A graduate of a N5T Nordic Master Programme receives two Master of Science degree certificates, one from each degree awarding institution. Grades from completed courses are listed in the academic transcripts from the two institutions.



Annex 11

Quality Assurance procedures at institution level

Aalto

At Program level, annual program reviews are conducted as a self-assessment exercise. Regular student feedback collected from all courses. Graduate survey conducted regularly.

All degree programs assessed annually at School level.

University reviews are conducted annually.

National, institutional audit is conducted in a six year cycle by FINEEC (member of ENQA).

Chalmers

The programs undergo external evaluations (in addition to national regulatory authorities' recurrent reviews). The evaluation process varies among the programs but involves reviews of areas such as courses, course evaluations, learning environment, and students' participation.

DTU

DTU has been granted an institutional accreditation by the Danish Accreditation Institution (member of ENQA). The institutional accreditation ensures that the quality assurance system of the institution is well-described, well-argued, and well-functioning in practice.

Quality assurance of teaching and study programmes at DTU is systematically supported by the following measures:

- On-going evaluation of teaching: course evaluations and exam evaluations
- Evaluation of the study environment: a. Study start evaluation, b. First year evaluation, and c. Study environment survey
- Programme evaluation: programme evaluations with external participants
- Graduate surveys
- Programme relevance is established through dialogue with relevant stakeholders at all levels (institutional, departmental and programme level)

At the central level, a drop-out analysis and employment statistics are done on a continued basis. All measures are supported by the Office for Study Programmes and Student Affairs.

Follow up is ensured at three levels:

- the Dean of Graduate Studies and the Dean of Undergraduate Studies and Student Affairs have the overall responsibility for ensuring the quality of programmes and teaching.

- Each programme has a head of studies who is appointed by and report directly to the dean and who is responsible for the development and quality assurance of the study programme including follow up on programme evaluations.
- The Department Directors are responsible for follow up on course evaluations.
- Study boards are responsible for ensuring the quality and development of the courses that are part of a programme.

The results of the individual evaluation measures are discussed in the relevant fora: department study boards, the programme coordinators' forum, the bachelor programme council and the master programme council. Development of teaching is furthermore sustained by the annual staff development interviews/performance appraisals.

External quality assurance is done by the Danish Accreditation Council on a regular basis.

KTH

The evaluation process varies depending on the programme but usually includes continuous evaluation of teaching and course evaluation from the students.

The continuous process for quality assurance is now updated, and follows a six year cycle. More information can be found at <https://intra.kth.se/styrning/kvalitetsarbete>.

NTNU

KVASS is a Quality Assurance System, where all courses and programmes are evaluated. The KVASS system ensures continuous evaluation and ensures the quality of the different courses and programmes. The results of the evaluation are discussed in the relevant fora: department, faculty, etc