

## NATIONAL JOINT PH.D. PROGRAMME IN NAUTICAL OPERATIONS

### PhD Plan Instructions

The PhD plan is a **tool** for directing the development of a PhD process. It is meant as a **communication** element between the student, the supervisors, and the PhD administration. This tool can help the students and the supervisors formulate and concretize the elements involved in a research process. From the administration point-of-view, it is a tool for judging the extent to which the proposed research can be realized within the framework of a PhD study. It is therefore recommended that the student's and supervisor's progress reports are based on the PhD plan.

The PhD plan must be submitted no later than three months after the start of the studies. In the middle of the PhD contract period (i.e. in the third semester for 3-year PhD contracts and in the fourth semester for 4-year PhD contracts) the PhD plan will have to be updated according to the progress. A reminder will be sent out to the PhD student about a few months before this is due. The updated plan has to be submitted as the basis for the mid-term evaluation. It will be evaluated at an open mid-term evaluation seminar which is to be held at 1,5 years (for 3-year PhD contracts) or 2 years (for 4-year PhD contracts) of studies. At this seminar, the student will present the updated PhD project plan followed by a discussion led by two external evaluators. After this seminar, the PhD student will further update the plan in accordance with the feedback received at the seminar. Further details regarding the mid-term evaluation seminar can be found on the programme website under "[The PhD Programme Progression, procedure descriptions and forms](#)".

The template here is intended to help the students and supervisors consider the different elements of the PhD process. The template is the same for both the initial plan and the plan submitted in conjunction with the mid-term evaluation, but it is expected that the latter plan is much more concrete and elaborate. The particular areas that you must pay attention to with regards to the plan submitted in conjunction with the mid-term evaluation are written in italic. The PhD plan should be specific and as short as possible while still containing the necessary information.

The PhD plan must be submitted together with your final application for admission to the programme.

A proper scientific conduct must be demonstrated throughout the PhD plan. For guidelines, see the following publications of the Norwegian National Research Ethics Committees:

- [General guidelines for research ethics](#)
- [Guidelines for research ethics in science and technology](#)
- [Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology](#)

The PhD plan should not exceed 10 pages (12-point font size, 20 mm margins on all sides) excluding front page and list of references.

## **PhD Study Plan**

**<Project Title>**

Ph.D. student: <insert name and home institution>

Programme: National Joint PhD Programme in Nautical Operations

Main Supervisor: <insert name and affiliation>

Co-supervisor(s): <insert name(-s) and affiliation>

## Section 1. Project summary

A short (max 400 words) summary in non-technical language describing key motivation, significance, methodology, and expected outcome of the PhD study. A reader of the local newspaper should be able to understand the summary.

*Updated plan submitted in conjunction with the mid-term evaluation: An updated version of the summary.*

## Section 2. The scientific contents of the PhD project

**a. Background.** The background for the project problem should be described (corresponding to maximum 300 words).

**b. State-of-the-art.** An introduction stating the state-of-the-art for the PhD project. The introduction should include key references listed under section 11. Typically, at least 10-15 references to peer reviewed scientific material are expected. In case it is necessary to refer to non-peer reviewed material, then use a footnote (or parenthesis) to provide information to the source.

*Updated plan submitted in conjunction with the mid-term evaluation: The state-of-the-art for the PhD project must be updated including use of the most essential references (list references under section 11).*

**c. Project objectives.** Statement of the project's objectives followed by a formulation of the specific problem(s) addressed in the study. This could be formulated as a hypothesis and or research questions if applicable. Explain the relevance of the present PhD project so the scientific contribution will be evident – i.e. explain how the project advances current state-of-the-art. Scientific challenges should be clearly defined – do not mistake this for technological challenges.

*Updated plan submitted in conjunction with the mid-term evaluation: Update project objectives.*

**d. Key methods.** Coverage of the methodological needs, identification of means of meeting these needs, and the methodological design. The coverage should include techniques for evaluating or assessing the outcomes of the project. Some examples of methodology are empirical studies (observational or experimental), statistical analyses, mathematical deduction, computer simulation...

*Updated plan submitted in conjunction with the mid-term evaluation: Update the key methods for the PhD project.*

**e. Significance and outcome.** Potential significance and application(s) of the project's expected outcome, possibly including methodological contributions.

Updated plan submitted in conjunction with the mid-term evaluation: Experiences and results obtained so far in the project followed by expected outcome of the entire PhD project.

## Section 3. Work and publication plans

**a. Work and Time Plans.** Work and time plans including measurable milestones (project milestones and deadlines for expected publications for each quarter or finer). It is recommended that a number of sub-project activities are identified that can be associated with milestones, so that there are milestones (at least) each six months during the project. Remember to allocate time for preparing scientific publications (conference papers, journal papers etc.). Deadlines for the expected publications must be included. These milestones will allow the PhD student and supervisor(s) to assess the status of the project each six months and to revise the plan if needed. The specific activities described in the time plan must be of such detail that it is clear what should be carried out. A proposal for the layout of a time schedule is shown below. Assess the risk of not reaching the various milestones at the deadlines given. Provide precautions for milestones for which the completion of the associated task could be problematic.

Year	2015		2016				2017				2018	
Quarter	3	4	1	2	3	4	1	2	3	4	1	2
Literature study												
Design of setups for electrical and combined tests of materials												
Test on composite materials' electrical properties and combined tests												
Design of setups for small-scale lightning shielding simulation test												
Small-scale lightning shielding simulation test												
Development of system critical parts for small/full-scale HV test on cross-arm												
Electrical-and-mechanical combined test on small parts of composite cross-arm												
Test of cross-arm phase-to-phase/ground insulation (LI, SI and AC in wet/dry)												
Test and measurement of corona activities on cross-arm (dry/moisture)												
Test on lightning protection performance of the pylon												
Writing the thesis												
PhD courses												
Publishing of papers			C1		C2	C3	J1	C4	C5	J2	J3	
Milestones					MS1	MS3	MS3	MS4		MS5	MS6	

MS1: Material selection. MS2: Combined test. MS3: Small-scaled lightning protection test. MS4: Tests to verify insulation capacity. MS5: Tests to verify dimensions. MS6: handing the thesis

Activities finished	Activities being performed	Planned activities	Buffer time
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*Updated plan submitted in conjunction with the mid-term evaluation: An updated time schedule for the entire project must be included.*

**b. Outline of the thesis.** Outline the content of the thesis, including an indication on whether the thesis is expected to take the form of a collection of papers or a monograph. This description could be organized by means of an overall table of contents. In case of a collection of papers, the thesis must contain an extended summary (e.g. 20-40 pages) that provides an overview of the topic, reviews the papers, highlights the most significant scientific results achieved, and relates the findings to the current international state-of-the-art. Note that for each paper on which the thesis is based, a co-author statement must finally be submitted together with the thesis.

*Updated plan submitted in conjunction with the mid-term evaluation: update outline of the content of the thesis.*

**c. Tentative publication list.** Provide tentative list of publications. Regardless of the format of the thesis, it is recommended that results are documented and submitted for publication in peer-reviewed outlets throughout the project. For each publication, the following should be indicated or estimated: working title, co-authors, length in pages, outlet (e.g. a named conference or journal), and approximate time of submission. Indicate who has the primary responsibility for the publication. Publications in journals indexed in the [Norwegian Register for Scientific Journals, Series and Publishers](#) are encouraged.

*Updated plan submitted in conjunction with the mid-term evaluation: update list of papers.*

## Section 4. Supervisor/student co-operation agreements

An agreement on how the relationship between supervisor and student will be managed (meeting frequency, communication forms, mutual expectations, etc.) has to be made.

The supervisor and the student must conduct a meeting in which the mutual expectations are clarified before authoring this section.

For guidance, please use the document «Suggested areas for agreement between student and supervisor».

*Updated plan submitted in conjunction with the mid-term evaluation: Status for relationship and updated agreement on the relationship between supervisor and student.*

## Section 5. Plan for PhD Courses

Courses adding up to 30 ECTS credits must be outlined. Of these, the joint HTOI-course and the philosophy of science course are mandatory. The rest of the courses must be project-related (not general). All courses

must be at PhD level at identifiable institutions. The estimated workload for the student is 25-30 hours per ECTS credit. Please use the table below:

Courses	Place/Organized by	ECTS	General/Project course	Status
	<b>Total</b>			

By the time of completion of the PhD study, documentation of the contents and the extent of the courses must be provided along with approval from the main supervisor and the proof that they have been passed at a satisfactory level. (In order for courses to be included in the coursework component, minimum grade “B” must be obtained for courses graded along the scale A-F; and the grade “passed” must be obtained for courses graded along the scale passed/not passed).

*Updated plan submitted in conjunction with the mid-term evaluation: Update the course table.*

## Section 6. Plan for fulfilment of knowledge dissemination

Plan for dissemination of knowledge and findings from the project (e.g., in newspaper articles, seminars, conference presentations, teaching etc.). As seen, dissemination is not only teaching but can also be other activities. Moreover, it should be described how the knowledge will be disseminated to relevant organizations and industry and to the general public.

*Updated plan submitted in conjunction with the mid-term evaluation: update plan for dissemination.*

## Section 7. Agreements on immaterial rights to patents

Outline relevant agreements on immaterial rights to patents, etc. produced during the PhD project. Typically, it is sufficient to mention that IPR is handled via the standard university rules.

*Updated plan submitted in conjunction with the mid-term evaluation: Update this section if applicable.*

## Section 8. External co-operation

The joint programme requires that all PhD students during their study time have research stays in active research environments, such as primarily foreign research institutions, private research organizations, etc. Describe the plan for engagement in active research environments. It is recommended that this be achieved via one or more stays at a foreign research institution with a total duration of 3-6 months. One or two tentative co-operative institutions should be described. The co-operation should be an active research co-operation in which also the host institution contributes to the research. The host institution must be a research institution or a company doing research. Summer schools, conference attendance etc. are not considered external cooperation. Please, note that the joint programme has official cooperation agreements with the following four international HEIs, which are therefore the recommended cooperation institutions: World Maritime University (Malmö), Liverpool John Moores University, Delft University of Technology and Maritime University of Szczecin.

*Updated plan submitted in conjunction with the mid-term evaluation: The description must be updated with completed and expected/planned co-operation activities. At this point, these should be specific and the host should have explicitly agreed. Note that it is very important that the external stay is planned well in advance in order for the PhD student to benefit from it the most.*

## Section 9. Career Plan (Only in the *Updated plan submitted in conjunction with the mid-term evaluation*)

*Updated plan submitted in conjunction with the mid-term evaluation: Describe your long-term career plans, i.e., beyond the PhD studies. For example, do you plan to pursue a career in academia and, if so, what is the next step after graduation? Is it a postdoc abroad or an industrial postdoc after which you plan to become assistant professor? Or do you intend to become an industrial researcher, and, if so, in what industry and with what potential companies. In what role do you see yourself long-term? Do you, for example, see yourself as a technical specialist or is your ambition to become a research manager? Explain how your PhD study plan and the choices you have made herein supports your career plan (e.g., the courses you plan to follow, your plans for external collaborations and knowledge dissemination).*

## Section 10. Financing budget

Information on the financing budget for the PhD project i.e. expenses needed to complete the project (not salary). The funding source or sources should be identified. This part is for information entirely and cannot be used to demand any resources from the department, home institution or programme – this part is governed by the specific agreement between the department and the PhD student, which is agreed upon by the time of enrolment.

*Updated plan submitted in conjunction with the mid-term evaluation: Update this section if applicable.*

## Section 11. References

List of essential references used in the PhD plan (e.g. in state-of-the-art) including authors, title, publication outlet, pages/volume/year and for conferences also town/country/dates. Include only peer reviewed publications (includes books from recognized publishers). The list should include the most important 10-25 references in the research field and be no longer than one page.

*Updated plan submitted in conjunction with the mid-term evaluation: Update as appropriate.*