

PhD Handbook

Faculty of Mathematics and Natural Sciences

July 2017



Introduction

The Faculty of Mathematics and Natural Sciences is Norway's largest natural sciences faculty. The faculty is one of Europe's most attractive academic communities in mathematics, natural sciences and technology.

The Faculty's departments and centres cover a broad spectrum of interdisciplinary research. PhD candidates are integrated into large, excellent research communities that play a leading role nationally and internationally. About 50% of PhD candidates and 20% of academic staff come from foreign academic communities, which increase the strong international profile of the faculty.

A PhD from the Faculty of Mathematics and Natural Sciences is a highly sought after qualification in higher education, research, business, and public administration. The employment rate of our doctors is very high, and many of them receive job offers before completing their degree.

The PhD programme at the faculty educates independent researchers of a high international calibre in accordance with universally recognized academic and ethical principles. The education qualifies for research activity and other employment in which the expected standard of scientific insight and analytical thinking is high.

When the programme is completed, the candidates will have an understanding of and will have mastered key philosophy of science and research ethics questions, and mastered the research methods of the subject area and their relevance. They will further be able to assess the appropriateness and application of different methods in research and development projects, be able to help develop new theories, methods and interpretations in the subject area, and assess them critically.

The doctors must be able to formulate issues for, plan and execute research and development tasks, and conduct research of an international calibre. They must be able to analyse complex academic questions and challenge the established knowledge in the field. They must further be able to supervise others in research and development work, be able to participate in and help further develop their own research communities, and communicate their subject constructively to the academic community and the public.

About the handbook

The purpose of this handbook is to provide information regarding the doctoral programme at the Faculty of Mathematics and Natural Sciences. The handbook is primarily intended for prospective and current PhD candidates, but it will also be useful for supervisors, members of evaluation committees and others who are interested in our PhD programme.

The handbook is based on the "Regulations for the degree Philosophiae Doctor (PhD) at the University of Oslo" and "Supplementary Regulations at the Faculty of Mathematics and Natural Sciences to the Regulations for the Degree of Philosophiae Doctor (Ph.D.) at the University of Oslo".

While this handbook provides an overview of the whole PhD course, more detailed information will be available at: <http://www.mn.uio.no/english/research/phd/>

Links to relevant documents and forms are also given at the end of each section of the handbook.

If you are employed as a research fellow, you have both an employment relationship to the Faculty of Mathematics and Natural Sciences or another employer and a student relationship to the Faculty of Mathematics and Natural Sciences. This handbook only contains information concerning the student relationship and the PhD programme. For information on the rules and guidelines that apply to employment at UiO we refer to the UiO internal personnel handbook (Norwegian): <http://www.uio.no/for-ansatte/arbeidsstotte/personal/intern-personalhandbok/>

1. Application and admission

The formalised research education at the MN Faculty is organised in one single PhD programme. Admission to the PhD programme is on-going throughout the year.

There are several paths to the PhD programme. You can apply for an advertised doctoral position or you can apply for external funding. In both cases you can either be employed by UiO or elsewhere. Once your funding is in place, you must apply for admission to the faculty's PhD programme.

PhD candidates automatically receive temporary study right to attend PhD and Master's level courses and can register for courses which are to be included in the educational component for the PhD degree without having to pay the semester- and copy fees. The temporary study right is being given for six months from the start date in PhD candidates' employment contracts and expires after three months if the faculty has not received the application for admission to the PhD programme.

Admission requirements

Qualifications

The following criteria apply to admission to the PhD programme in natural sciences:

- Master's degree or the equivalent
- completed foreign degree (MSc level) corresponding to at least four years in the Norwegian university system
- the average grade for the Bachelors' degree must not be lower than a C

- the average grade for Master's-level courses must not be lower than a B
- the Master's dissertation must have grade B or higher

The Faculty is the formal authority to evaluate foreign education.

English language skills

All PhD candidates must demonstrate high English language skills. International applicants must document these skills prior to admission to the PhD programme by passing one of the following tests with these or better grades:

- TOEFL – Test of English as Foreign Language, internet based test (IBT). Minimum total score: 80
- IELTS – International English Language Testing Service. Minimum overall band score: 6.5
- Certificate in Advanced English (CAE) and Certificate of Proficiency in English (CPE) from the University of Cambridge
- PTE Academic – Pearson Test of English Academic. Minimum overall score: 62

Test results must be valid (not older than two years) on the date of the application.

The following applicants are exempted from the above-mentioned requirements:

- applicants from EU/EEA-countries
- applicants with one year of completed university studies in Australia, Canada, Ireland, New Zealand, United Kingdom, United States
- applicants with an International Baccalaureate (IB) diploma
- applicants who have completed a Bachelor's and/or a Master's degree with English as the language of instruction in one of the Nordic countries or the Netherlands
- applicants from countries for which the Norwegian Agency for Quality Assurance in Education (NOKUT) recommends an exemption from these rules.

The application

The applicant shall, in collaboration with the supervisor, present a cohesive plan for the PhD degree. A project description that only covers the applicant's specific PhD project must be enclosed with the application.

Every candidate must have at least two supervisors in order to be admitted to the PhD programme. Supervisors must have a doctoral degree and/or have experience comparable to a professor or associate professor.

The application must be sent to that department with the most relevant and desirable academic affiliation for the applicant. The department sends an evaluation of the application and the application itself to the faculty.

Residency

The PhD programme is an organised research education and the PhD candidate must generally spend one man-year at the University of Oslo (residence duty). The residence duty can be divided into maximum three periods. The residence duty may be reduced if it is documented that the PhD candidate is a part of a rigorous research environment and the academic demands for supervision are sustained.

The Faculty informs the applicant and the department about the outcome of the admission's application.

The admission shall be denied if:

- the agreements with external third parties will prevent the public release and public defence of the thesis
- the applicant will not be able to fulfil the requirement that at least one year of the doctoral programme shall be carried out after admission.

Admission period

The PhD candidate/supervisor sends the application for admission to MN's PhD programme to the department within the first two months of the PhD employment contract. The department sends the application for admission to MN's PhD programme to the faculty within the first three months of the applicant's employment contract (July is not counted due to summer vacation).

Following expiry of the admission period, the parties' right and duties under the doctoral contract cease to exist, such that the doctoral candidate loses entitlement to supervision, course participation and access to university infrastructure. The candidate may, however, apply to the faculty for permission to submit the thesis for evaluation for the PhD degree.

Extension of admission period

PhD candidate/supervisor sends the application for extension to the department. The appropriate form must be used.

PhD candidates with academic responsibilities other than their research and mandatory instructional duties may apply to extend their admission period. These responsibilities must be agreed upon by PhD candidate, supervisor and the department in advance. The faculty must be notified about the agreement reached.

PhD candidate employed externally have to inform the Faculty of leaves of absence in order to get extension of admission period.

Mandatory duties

The PhD candidate's mandatory duties should be relevant with regards to future advancement in research- and instructional positions. The mandatory duties should mainly consist of instruction such as:

- instruction on Bachelor's, Master's
- collecting and arranging material for instruction
- examination
- supervision of Bachelor's and Master's students.

Time spent on:

- compulsory pedagogical instruction
- participation in official committees of the University of Oslo

is to be registered as mandatory duties.

The department may allow other tasks to be registered as mandatory duties.

Mandatory duties must be spread evenly throughout the employment period. The department must arrange the mandatory duties so that the PhD candidates may spend unhindered at least six months abroad as part of their PhD programme.

Resources

Application and admission: <http://www.mn.uio.no/english/research/phd/application/index.html>

Applying for a research fellowship: <http://www.mn.uio.no/english/about/vacancies/>

External funding: <http://www.mn.uio.no/english/research/phd/application/external-funding.html>

Extension: <http://www.mn.uio.no/english/research/phd/structure/>

2. Supervision

Content of academic supervision

The supervisors must keep abreast with the PhD candidate's progress comparable to the progression plan. The supervisors must also be available for regular written/oral dialogue with the PhD candidate. The existence of external supervisors puts greater onus on departmental supervisors to evaluate the project and affiliate the PhD candidate to the faculty's research environment.

The candidate's obligation

The PhD candidate is obliged to uphold the agreed residency requirements, hold an active dialogue with all supervisors about the progression as well as presenting drafts for written work for discussion with supervisors.

Appointment of academic supervisors

Each PhD candidate shall have at least two supervisors who are actively involved throughout the candidate's degree. Supervisors must have a doctoral degree and/or have experience comparable to a professor or associate professor.

The supervisors shall advise on the formulation and definition of the topic and problem statements; discuss and assess hypotheses and research methods; discuss results and their interpretation; discuss the form and presentation of the thesis, including its structure, linguistic form, documentation etc.; and guide the candidate towards scientific literature and data in libraries, archives etc. The supervisors shall also advise on matters of research ethics pertaining to the thesis.

Members of a supervisory group must not have close personal relationships to the PhD candidate or to other members of the group.

The principal supervisor

The principal supervisor must be a permanent member of the academic staff or be an adjunct associate professor/adjunct professor at one of the departments sorting under the faculty. Temporary academic staff at one of the departments sorting under the faculty may become a principal supervisor upon the department's recommendation. Experienced researchers at well

regarded partner research institutions may similarly be appointed as principal supervisors upon the department's recommendation. In such cases, a co-supervisor employed at the University of Oslo shall be appointed. In both cases, the robustness of the supervisory group must be evaluated.

Change of supervisors

The PhD candidate and the supervisor can in cooperation request the faculty to appoint additional supervisors. A supervisor may not vacate his/her post prior to the faculty appointing additional supervisors.

Resources

Supervision: <http://www.mn.uio.no/english/research/phd/supervision/>

Ethical guidelines for supervisors at UiO <https://www.uio.no/english/about/regulations/ethical-guidelines/ethical-guidelines-supervisors/index.html>

3. The educational component

The faculty decides which elements are to be included in the educational component. The academic content is vouched for by the department with which the PhD candidate is affiliated.

The educational component's scope, composition and content

The educational component must contain no fewer than 30 and no more than 40 credits (in accordance with the European Credit Transfer System (ECTS)). The content must be of such a nature that it will in combination with the thesis impart academic breadth and depth. Up to 10 credits may be used on Master's level courses with a pass grade of either A or B in the Norwegian educational system. At least 5 credits must be used on a course on research ethics, academic theories and methods. The educational component must generally include a minimum of 20 credits of academic/scientific courses.

The courses included in the educational component must not have been included in any previously obtained degrees or have formed the basis for admission to the PhD programme.

Credits that are to be recognized as part of the educational component may not have been completed more than two years prior to the date of admission.

All courses to be included in the educational component must have final examinations with grades.

The educational component must be completed with pass grades in its entirety before the PhD candidate may apply the faculty to have his/her thesis assessed.

Along with the application to have the thesis assessed, the department also sends documentation to the faculty showing pass grades for the courses in the educational component.

Research courses and special syllabus

Up to 10 credits may be used on national or international research courses or special syllabus in the form of literature or method studies that are relevant for the thesis. Research courses with final exams arranged partly or wholly by MN/NHM may be accepted in the educational component as ordinary courses.

The scope and academic level of the research courses must be evaluated by the department. The following crediting is used: 25-30 student hours is awarded with 1 credit. National and international research courses lasting five full working days give 2 credits.

In order to add a research course without a final exam in the educational component, the candidate must hold a seminar at the department within six months of attending the course. The seminar must be evaluated by a representative from the departmental PhD council.

Resources

Educational component: <http://www.mn.uio.no/english/research/phd/courses/>

PhD courses offered at the Faculty of Mathematics and Natural Sciences:

<http://www.uio.no/english/studies/courses/matnat/?filter.level=phd>

4. Progress reports

PhD candidates must submit written progress reports: it is the unit's responsibility to ensure that annual reports are submitted by the candidate and supervisors. When the unit has received all reports, a summary will be prepared and sent to the faculty. Any significant deviations from the candidate's schedule or other special matters must be specified and remarked on in the summary.

Third semester reports

Third semester reports must be written between twelve and fifteen months after appointment. The results achieved during the period will be presented to a committee, and the PhD candidate must account for any deviations from the progress plan. The unit will freely compose a competent committee with at least three members. Supervision will be discussed both with and without the supervisor present. The committee will attempt to identify any problems. A summary of the committee's conclusions will be sent to the unit's PhD committee and to the faculty.

Resources

Progress reports: <http://www.mn.uio.no/english/research/phd/structure/>

5. Research Schools administrated by the Faculty of Mathematics and Natural Sciences

The national researcher schools are designed to offer efficient training of doctoral students by providing a platform for scientific discussions, to strengthen domestic and international networking in the subject area, offering specialised courses as well as soft skill training.

Norwegian Research School for Dynamics and Evolution of Earth and Planets (DEEP):

<http://www.mn.uio.no/ceed/english/research/doctoral-degree/national-phd-school/>

Norwegian PhD School of Pharmacy (NFIF):

<http://www.mn.uio.no/farmasi/english/research/national-phd-school/>

The National Graduate School in Infection Biology and Antimicrobials (IBA):

<http://www.mn.uio.no/ibv/english/research/groups/cime/iba/>

6. Thesis requirements

The thesis shall be an independent, scientific work that fulfils international standards with regard to ethical requirements, academic standards and methodology.

In the duration of the degree work, parts of the thesis must normally be sent in for publication in international journals and/or presented at international conferences.

If a written work is the product of a collaborative effort with other authors, the PhD candidate must adhere to the norms for co-authorship that are generally accepted in the academic community and UiO's guidelines for co-authorship.

When using published works, these cannot be accepted as part of a doctoral thesis if they were published more than five years before the candidate's admission date.

The thesis must be written in English.

A work or a part of a work that has been approved as the basis for previous examinations or degrees is not eligible for evaluation. However, data, analyses or methods used in previous degrees may be used as a basis for the doctoral project.

7. Completion

The department must receive the application to have the thesis assessed no later than three months prior to the tentative date of defence. Final date for the defence must not be set prior to the evaluation of the thesis being approved by the faculty.

The committee must evaluate the thesis within six weeks and the PhD candidate has two weeks for commenting the evaluation.

If, after submission to the University of Oslo, the thesis is also submitted for evaluation to another educational institution, the University's evaluation procedures will be suspended.

After submission, the thesis is evaluated by an expert evaluation committee consisting of two opponents and one UiO administrator. If approved, the thesis will be defended by discussing the research findings with the opponents at a public defence. A successful defence results in the conferring of a PhD degree, and the diploma is presented at a formal doctoral conferment ceremony.

The doctoral degree (PhD) is awarded on the basis of:

- an approved doctoral thesis and satisfactory public defence,
- approved completion of the educational component, and
- an approved trial lecture on a topic set by an evaluation committee

The trial lecture

When the thesis has been approved by the Dean of Studies, the trial lecture and public defence can be held. The committee will be in attendance and serve as adjudicators in the trial lecture and public defence. The candidate will be informed of the topic by the unit ten working days before the trial lecture. The trial lecture is held in English and is organised by the department which is also responsible for the announcement. The trial lecture must be of 45 minutes in duration. The purpose of the trial lecture is to evaluate the PhD candidate's proficiency in conveying research

based knowledge outside of the candidate's own subject area. The topic for the trial lecture must thus not be derived from central issues in the thesis. The target group for the trial lecture is students, colleagues without specialist knowledge.

Public defence of the thesis (disputation)

The public defence is an open event where a PhD candidate publicly presents and defends his/her completed doctoral thesis to two critical opponents from the expert adjudication committee. The public defence is normally chaired by one person from the department management or a representative. Once the PhD candidate has passed both the trial lecture and public defence, the doctoral degree is awarded.

The public defence is held in English.

The chair of the public defence will briefly explain the submission and assessment of the thesis, and give a brief formal introduction of the candidate. The candidate will then spend a maximum of 30 minutes explaining the purpose and findings of the scientific investigation.

Two of the committee members serve as opponents. The first opponent will put the candidate's work into an international academic context, for a maximum of ten minutes. When both opponents have concluded their arguments, the chair of the public defence will invite others present to participate in the discussions.

Finally, the candidate will take the floor to extend his/her thanks, before the chair of the public defence declares the public defence concluded.

The public defence must be held on UiO premises.

Resources

Thesis, adjudication and public defence: <http://www.mn.uio.no/english/research/phd/thesis-adjudication/>

8. Conferral

The University of Oslo holds formal ceremonies four times a year to present PhD diplomas to the candidates that pass the public defence.

Resources

PhD dinner and conferral ceremony: <http://www.mn.uio.no/english/research/phd/thesis-adjudication/phd-conferral.html>