

Programme description for the PhD programme at the Faculty of Mathematics and Natural Sciences

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Programme description for the PhD programme at the Faculty of Mathematics and Natural Sciences

This is an unofficial translation of the Norwegian version of the programme description and is provided for information purposes only. Legal authenticity remains with the Norwegian version. In the event of any inconsistency, the Norwegian version shall prevail.

Programme name, objectives, scope and qualification

Name of programme

The PhD programme at the Faculty of Mathematics and Natural Sciences, University of Bergen.

Qualification of the programme

The PhD programme at the Faculty of Mathematics and Natural Sciences leads to the Philosophiae Doctor (PhD) degree.

Description of learning outcomes

Knowledge

The candidate

- is in the forefront of knowledge within their field of research and masters the field's philosophy of science and methods
- can evaluate the expediency and application of various methods and processes in research and academic development projects
- can contribute to the development of new knowledge, new theories, methods, interpretations and forms of documentation within their field of study

Skills

The candidate

- can formulate problems, plan and carry out research and scholarly development work
- can carry out research and scholarly development work of a high international standard
- can handle complex academic issues and challenge established knowledge and practice in their field of study
- masters advanced methodological tools within their field of study
- can critically assess the ethical aspects of a research project

General competence

The candidate

- can identify new relevant ethical issues and carry out their research with academic integrity and responsibility
- can plan and execute complex tasks and projects
- can communicate research and development work through recognised national and international channels and fora

- can communicate their own field to the public

Organisation of the programme

Responsibilities of the faculty

The faculty itself makes decisions regarding admission to the PhD programme, appointment of supervisors, final approval of the coursework component, compulsory termination, appointment of an assessment committee, whether a submitted thesis is worthy of public defence for the PhD degree, correction of formal errors in the thesis and whether the trial lecture and defence can be approved.

Responsibilities of the department

The department head, PhD education committee at the department and supervisory committee are responsible for the daily follow-up of the PhD candidates. The aim is to ensure academic quality, feasibility, follow-up through the study programme, and the most similar framework conditions possible irrespective of the supervisory committee and research groups with which the PhD candidate is affiliated. The departments make decisions on the approval of parts of the coursework component, recommend admission to the programme, approval of the trial lecture and proposals for the assessment committee.

Admission

An application for admission to a PhD programme must normally be submitted within two (2) months after the start of the research project that will lead to the PhD degree. If there is less than one (1) year's full-time work left on the research project at the time of application, the applicant should be rejected, cf. Section 5-2 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

Admission requirements

For 5-1 Admission requirements

Education requirements

For admission to the PhD programme at the Faculty of Mathematics and Natural Sciences, the applicant is required to hold a five-year master's degree or equivalent, in accordance with descriptions in the second cycle of the Qualifications Framework. The faculty may, following a separate assessment, approve another equivalent education as the basis for admission, cf. Section 5-1 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

The faculty may, after a comprehensive assessment, exceptionally approve admission of candidates with master's degrees from accredited institutions that are shorter than 5 years, but at least 4 years. This includes, for example, foreign master's degree programmes that, after validation, are collectively equivalent to a Norwegian higher education degree with a nominal duration of four years of study.

The degree must:

- 1) be a higher degree (2nd cycle of the National Qualifications Framework),
- 2) include an independent work that has a scope of at least 30 credits, and
- 3) the applicant must additionally document activities or a grade point average above ordinary requirements

In case of doubt, the PhD programme board will assess the matter.

Grade requirements

The average grades for the bachelor's degree specialisation, the courses in the master's degree and the master's thesis, respectively, must be C or better in the Norwegian grading scale. The grade limit for admission is normally calculated as 3.0 (A = 5, B = 4, C = 3, D = 2, E = 1) for the specialisation in the bachelor's degree, the courses in the master's degree and the master's thesis.

Funding requirements

Applicants to the PhD programme should normally be employed in a PhD position at UiB or other collaborating institutions. Funding for the research project and cost of living must be clarified at the time of application, and applicants must have established contact with a supervisor employed at UiB.

When admitting candidates with external funding that are not employed in a PhD position at the University of Bergen or other collaborating institutions, the responsible department must assess whether the funding ensures the same good and equal framework conditions for implementation of the PhD project that other candidates have. Upon admission, a candidate will be given a number of rights, and the department must make commitments equal to those accorded to other candidates admitted to a doctoral programme. If a candidate is employed at a company and is to carry out the PhD programme with salary from the company, it must confirm that the applicant can spend a minimum of 50% of their work time on the PhD project.

Language requirements

When applying for admission, applicants with foreign degrees must document good proficiency in English according to the current rules at the faculty.

Application requirements for admission to the PhD programme

Application content requirements

Applications shall be submitted on the specified application form and shall contain the following points:

- Funding plan
- Project description
- Plan for coursework component, including training that will provide general competence in accordance with the qualifications framework, academic dissemination and ethics.
- Main supervisor and co-supervisor(s)
- Documentation of special needs for academic and material resources.
- Any plans for stays at another (including foreign) research institution or enterprise.
- Information about any intellectual property rights restrictions that are intended to protect the rights of others.
- Description of any legal and ethical issues that the project raises, and how these can be clarified. The application should state whether the project is dependent on permission from research ethics committees or other authorities, or from private persons (such as informants, patients and parents). If possible, such permissions should be obtained and attached to the application.

Requirements for documentation and attachments to application

Diplomas or other approved documentation of the completed degree must be enclosed when applying for admission.

An application for admission to research training programmes shall have the following attachments:

- diplomas w/transcripts
- CV
- summary of the master's thesis, overview of the master's degree syllabus if applicable
- project description
- copy of the appointment letter/work contract/confirmation of funding

For applicants with foreign degrees, the following requirements also apply:

- diplomas, transcripts and Diploma Supplement for all higher education which is part of the admissions criteria.
- diplomas and transcripts in the original language, as well as in English or a Scandinavian language in line with applicable guidelines for this

All candidates with foreign degrees shall, upon appointment to a PhD position or prior to their application for admission, be assessed by the faculty as to whether the scope and level of the degree and the grades attained meet the requirements for admission to the PhD programme.

For candidates with external funding who have not been appointed to a PhD position at UiB or a collaborating institution, there are additional requirements for documentation of funding, as well as a supporting letter concerning the financial obligation of the department.

Project description requirements

A project description must be enclosed with applications for admission. Anyone seeking admission to the PhD programme must have established contact with a supervisor employed at UiB. The project description shall be prepared by the candidate in cooperation with the proposed supervisory committee and will form the framework for the PhD project.

The project description should be brief and concise, normally 4-10 pages, including reference list. The project description can have a limited number of figures.

The project description shall contain the following items:

- Academic background ("state-of-the-art"). This includes the candidate's knowledge status, as well as how the planned project will add new knowledge to the specified field of research.
- Academic issues, methodology and project objectives. Division into sub-works with associated schedule. Statement of what is expected to be achieved. Preferably verifiable hypotheses.
- Basic data, methods, and statistics.
- Responsibilities and roles shall be specified for each of the members of the supervisory committee.
- Overview of partners, stays abroad, co-participation, etc.
- Key references
- Progress plan for work on verifiable milestones. The progress plan must include the publishing plan. It must be possible to use the progress plan in conjunction with the midway evaluation and progress reporting

Upon application for admission, the candidate shall present the project description to a committee in which the PhD education committee at the department is represented by at least one representative.

Decision on admission

For Section 5-2 Admission decision

The faculty itself makes the decision on admission to the PhD programme. The initial application assessment is undertaken by the department, which processes the application in the department's PhD education

committee in accordance with the applicable regulations and submits the admission for approval by the faculty. For admission of candidates with external funding who have not been appointed to a PhD position at UiB or a collaborating institution, a statement from the department and confirmation of funding shall be enclosed when the admission is submitted for approval by the faculty.

The admission decision shall be based on an overall assessment of the project description, the applicant's formal qualifications, sufficient resources for implementation, and the submitted plan for PhD training, and takes place after recommendation from the department.

One main supervisor and at least one co-supervisor shall be appointed in connection with admission. As a main rule, all necessary agreements shall be in place at the time the admission decision for the candidate in question is taken, or immediately afterwards, cf. Section 5-4 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

If the applicant's project indicates that an affiliation with several academic environments may be necessary, a statement shall be obtained from these academic environments and their respective departments prior to admission. A tentative percentage distribution of the input of the academic environments and any external partner should be drawn up. This shall be incorporated in the PhD agreement when it is signed.

Agreement period

For Section 5-3 Agreement period

Maximum length of planned course of study, with funding

The candidate shall normally apply for admission to a PhD programme within two (2) months after the start of the research project that will lead to the PhD degree.

The PhD programme has a prescribed length of three (3) years of full-time study. In the event of statutory leave, the agreement period is extended correspondingly. Completing the PhD programme at a rate of progress that leads to a course of study that is longer than six (6) years is not permitted, cf. Section 5-3 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

Admission for a shorter period than three years is granted if the candidate has already completed parts of a PhD programme, or when the admission builds upon prior employment in educational positions (fellow, research assistant, etc.), such that the total time for the project comprises three years.

Admission to the PhD programme will be terminated at the end of the funding period unless an extension is applied for.

See Section 5-5 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen* for rules on voluntary and compulsory termination prior to the agreed time.

Terms for extension after the end of the funding

Cf. Section 5-3 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*, the candidate may apply to extend the agreement period on a basis other than statutory leave of absence. The deadline for application is one (1) month before the expiry of the agreement period.

The application must include a statement of what has been completed and published and what remains of the work towards the PhD degree. Confirmation from the supervisor and the basic academic unit about academic supervision during the period of extension must be enclosed with the application. The application will be processed by the department's PhD education committee. The application can be granted when the department, after an overall assessment, finds that it will be possible to complete the project during the

extension period and that the department can provide necessary supervisory resources and infrastructure. The faculty itself must approve the extension and can set additional terms.

In the event an extension is granted, the candidate must apply for approval of the coursework component before the expiry of the first extension period, if this has not already been done.

PhD agreement

For Section 5-4 PhD agreement

No later than 3 weeks after receiving the admission letter, the candidate shall submit the PhD agreement to the department with necessary signatures from supervisors, department head and any external party. The PhD agreement with necessary signatures will be sent from the department to the faculty for approval by the faculty.

For candidates with external funding or employment, this shall be regulated in the PhD agreement between the University of Bergen and the collaborating party in connection with the research project concerned, cf. Section 5-4 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

Significant changes in the agreement that affect the completion of the research project or the coursework component will result in a revision of the PhD agreement. Applications and revisions are processed by the PhD education committee at the department level. The department sends the answer to the candidate with a copy to the faculty. Major changes shall be approved by the faculty.

When work on a PhD thesis involves several academic environments, faculties or departments, or when various academic environments are the workplace for the work on a thesis, academic credit and any financial reward for the individual academic environment shall be incorporated in a separate agreement.

Infrastructure

For Section 5-7 Infrastructure

The department must ensure that the necessary infrastructure and equipment for implementation of the research project is available throughout the PhD period. This must also be taken into account in the event of an extension of admission to the PhD programme.

Structure and content of the programme

Academic supervision

For Section 6 Academic supervision

The PhD programme is a supervised programme. This means that the candidate should be present at the university a significant part of the effective period of study, unless special conditions indicate otherwise.

For Section 6-1. Appointment of supervisors

A supervisory committee consisting of at least two members shall be appointed upon admission to the PhD programme. The committee is jointly responsible for providing academic supervision and shall consist of a main supervisor with academic responsibility and at least one co-supervisor. At least one of the members must be employed at the department with which the candidate is affiliated.

All those appointed as supervisors must have completed the E-course in PhD supervision in the past three years. See Section 5-1 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

For Section 6-2 Content of academic supervision

The supervisors are obliged to stay informed of the progress of the PhD candidate's work and assess this in relation to the progress plan. The supervisors shall also be regularly available for verbal/written dialogue with the PhD candidate. Where external supervisors are involved, the internal supervisor has a particular responsibility to quality assure the project and connect the PhD candidate with relevant academic environments at the faculty.

Cf. Section 6-2 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*, disagreements between the supervisor and candidate related to access to or having disposal of collected data, a dispute about the size of contributions to joint article projects, and disputes between copyrights etc., shall be brought in for consideration and ruling at the faculty itself. The decision of the faculty may be appealed to the Central Appeals Committee.

Obligations of supervisors

Cf. Section 6-2 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*, supervisors are to give advice on formulating and delimiting the research topic and research questions, discuss and assess hypotheses and methods, discuss results and their interpretation, discuss the structure and completion of the presentation (including outline, linguistic form, documentation), and provide guidance on the academic literature and data, including in relation to libraries and archives. Supervisors must also give the candidate guidance in matters of research ethics related to the thesis. The supervisors shall also actively participate in the planning of relevant courses and activities in the coursework component. Candidates and supervisors have a joint responsibility to consider the viability of publishing when selecting a research projects.

Main supervisor

The main supervisor is the main person the candidate will deal with during their PhD programme. The main supervisor is the candidate's primary contact person and is responsible for ensuring that the candidate is integrated into research groups and communities. The supervisor must be updated about the candidate's project and progress.

Duties of main supervisor:

- responsible for following up the candidate's academic development.
- primary academic and administrative responsibility for the PhD candidate
- is the PhD candidate's primary daily contact
- keep abreast of the progress of the PhD candidate's work, and follow up on academic matters affecting it.
- report annually to the faculty on the progress of the candidate's PhD education and contribute to the candidate's midway evaluation.

Co-supervisor(s)

Co-supervisors are any other experts who provide academic supervision and who share responsibility for the PhD candidate's academic progress with the main supervisor.

In cases where with the co-supervisor is employed by UiB, and the main supervisor is externally employed, the co-supervisor is responsible for integrating the candidate into relevant academic environments at UiB, and being updated on regulations and procedures related to the PhD programme.

The candidate's duties in the supervisor relationship

The PhD candidate shall be in active dialogue with all the supervisors about their progression, as well as submit draft written works for discussion with the supervisors.

The candidate's duties:

- plan the PhD programme in cooperation with the supervisors, and complete the agreed activities so that the agreement period can be complied with.
- inform the main supervisor about anything that could possibly affect the relationship with the supervisor, and keep in regular contact about the PhD programme.
- submit written work and presentations by agreement or at the request of the supervisors.
- make the supervisors aware of and discuss any matters related to research ethics.
- report annually on progress.
- carry out midway evaluation
- obtain documentation on completed activities in the coursework component, and keep supervisors informed about this.

Termination of academic supervision

By agreement, the PhD candidate and supervisor may request the faculty to appoint a new supervisor for the PhD candidate. The supervisor may not withdraw until a new supervisor has been appointed.

A request to be released from the supervision relationship must be addressed to the faculty, but sent via the department. The supervisor may not withdraw until a new supervisor has been appointed.

If a PhD candidate or supervisor finds that the other party is not complying with its obligations as specified in the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen* or supplementary rules and in accompanying agreements, the party that claims that a breach has occurred is obliged to take this up with the other party. The PhD candidate and supervisor shall jointly seek to find a solution to the situation that has arisen. If, following discussion, the parties have not reached agreement on resolving the situation, the PhD candidate or supervisor may request to be released from the supervision agreement. A request to be released from the supervision agreement must be sent to the faculty, which may decide to release the PhD candidate and supervisor from the agreement.

In connection with the replacement of the supervisor, the department must ensure that the candidate signs a supervision agreement with a new supervisor.

The supervisors, faculty and department must, to the greatest extent possible, ensure that conflicts over rights and any other issues that may lead to conflict are addressed early on, to avoid any risk of a delay in the PhD candidate's project.

Disputes concerning the supervisor's and PhD candidate's academic rights and obligations may be submitted by the parties for consideration and resolution by the faculty concerned. The decision of the faculty may be appealed to the Central Appeals Committee.

Midway evaluation

For Section 6-3. Midway evaluation

Midway evaluation is compulsory and shall be held no later than the end of the second year of the candidate's course of study. The department is responsible for conducting the midway evaluation.

Midway evaluations are conducted in the form of a presentation by the candidate. Ahead of the midway evaluation, the candidate must submit a written report to a committee appointed by the department. This report should provide an account of the status of the candidate's work on the thesis and the coursework component. In addition, the report must provide an explicit account of any methodological and/or ethical challenges in the work.

The committee must have a minimum of 2 members. One member should preferably be the head of, or member of the department's negotiation committee. The supervisor must not be a member of the committee.

Both the supervisor and the candidate must be present at the midway evaluation, but the candidate should also speak to the committee alone after the presentation.

As a main rule, the midway evaluation will include academic input from researchers within the PhD candidate's field and/or related fields.

The midway evaluation should result in a realistic schedule for completion of the doctoral programme. A written report or feedback from the committee shall be prepared. Should the evaluation indicate that the candidate is not making satisfactory progress, a more detailed follow-up plan should be drawn up that includes a follow-up meeting with the supervisor, candidate and representative of the department's management to be held within three (3) months. At the follow-up meeting, the midway evaluation committee must assess whether the follow-up plan is being followed. If the committee concludes that it is highly unlikely that the project will be completed, the head of department will contact the chair of the PhD programme board. Any information provided can be included in a discussion about terminating the course of study.

Coursework component (required coursework)

Cf. Section 7-2 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*, a minimum of 20 credits in the coursework component shall be completed after admission to the PhD programme. Elements that are older than 5 years at the time admission is applied for should not be included in the coursework component.

Coursework component requirements

For Section 7.3 Content of the coursework component

The content of the coursework component must be such that, together with the work on the thesis and previous education, it provides the necessary academic breadth and specialisation embodied in the objective of the doctoral programme. The elements of the coursework component shall be relevant to the PhD candidate's research project.

The coursework component shall comprise 30 credits and consists of the following elements:

- Courses, research courses, specialised syllabi, 20-22 credits
- Philosophy of science and ethics, 5 credits
- Dissemination, 3-5 credits including presentation at international conference.

Content of coursework component

Courses, research courses, specialised syllabi, 20-22 credits

Courses at the 200 level or above, research courses and/or specialised syllabi shall comprise 20-22 credits (depending on the number of credits in the dissemination component).

The faculty does not approve 100-level courses as part of the coursework component. If such courses are considered necessary as prerequisite knowledge for other courses or the research, these must be excluded from the framework of 30 credits.

National and international research courses with a duration of 5 full working days provide 2 credits. Documentation of the scope and content of the course must be obtained by the candidate and course organiser. No reporting/examination is required beyond what may be included in the course.

The descriptions of the specialised syllabus shall be such that it is possible to assess their content, level and scope. The form of assessment must also be specified. The department stipulates the form of assessment for the specialised syllabus included in the coursework component. Letter grades should be used when assessing the specialised syllabus.

- **Philosophy of science and ethics, 5 credits**

Candidates who have completed philosophy of science and ethics courses at the PhD level at other institutions may have them recognised following academic assessment. The external courses must cover elements included in the philosophy of science and ethics course offered by the faculty, see separate guidelines. The academic assessment is done by the faculty itself.

- **Dissemination, 3-5 credits**

All elements of the dissemination component shall normally be carried out after the application for admission to the PhD programme is submitted, or after the appointment to the PhD position has been made.

Activities to be included:

- Participation at international conferences with the presentation of results from own research (posters or lectures). International conferences do not include national meetings to which foreign speakers are invited. Two credits are awarded per conference. A maximum of one conference.

Other activities that can be included:

- Dissemination of knowledge courses
- Popular science contributions in own field. Up to 2 credits per contribution are given. A maximum of 2 credits.
- Seminar/lecture on individually selected subject. 1 credit. Duration: 1 lecture hour. Maximum of 1 credit.

The seminar/lecture must be open to all and announced 2 weeks in advance. The topic is proposed by the student and supervisor and approved by the department. The department appoints a committee of two members who assess the seminar/lecture. The committee sends the result of the assessment to the department. The criteria for seminars/lectures on self-selected subjects are the same as for a trial lecture on a given topic. The purpose of the lecture is to give the PhD candidate an opportunity to document their ability to disseminate research-based knowledge. The lecture should normally be structured so that it can be followed an audience with previous knowledge one could expect to find among master's students in the field of study. Both academic content and the ability to disseminate are emphasised in the assessment of the trial lecture.

Scientific articles included in the thesis do not provide credits in the coursework component.

Level and grade requirements

When making assessments in courses and/or specialised syllabi, the performance shall correspond to a grade of C or better. For elements with a pass/fail grade scale the pass grade must be equivalent to C or better. Letter grades must be used if a course does not have a pass/fail grade scale. Letter grades must be used for examinations in the specialised syllabus.

The coursework component can contain courses taught at other faculties or institutions. If there is doubt whether the level of a course is adequate, the course must be evaluated by a relevant academic environment at the faculty.

If previously taken exams are used in the coursework component, it shall be documented that they have been taken with a satisfactory result.

Recognition and assessment of elements to be included in the coursework component are assessed by the PhD education committee at the department.

Other matters

Applicants who have commenced a PhD programme (or equivalent) at a different institution may apply for approval of the completed part of organised research training at admission. Completed programmes must be documented in writing and the scope shall be assessed by the faculty based on the recommendation of the department where the candidate seeks admission. Activities approved under the dissemination component shall be completed after the doctoral programme at the other institution was commenced.

Application for approval of the coursework component

At least 6 months before the agreement period at the PhD programme expires, the PhD candidate shall apply to the department's PhD education committee for approval of the coursework component.

The application must be approved by the supervisor and must contain all necessary documentation of the completed activities in the coursework component. If all elements have been previously approved by the department's PhD education committee, confirmation by the supervisor and documentation are not required.

If not all of the activities are completed, the PhD candidate will make a plan to complete the coursework component approved by the supervisor. Documentation of elements that have yet to be completed must then be submitted when all elements in the coursework component are approved.

The department's PhD education committee processes applications for final approval; final approval is decided by the faculty itself.

If the candidate has been granted an extended agreement period on a basis other than statutory leave of absence, the application for final approval of the coursework component shall be submitted during the first period of the extension, if the coursework component has not been approved earlier.

The coursework component must be finally completed and approved when the candidate applies to submit his or her thesis.

Approval of the coursework component

The PhD education committee at the department is responsible for the content and approves elements to be included in the coursework component. The faculty itself makes decisions on the final approval of the coursework component.

Presentation requirements and documentation for coursework component

When applying for approval of the coursework component, the number of credits, year and semester must be disclosed for all activities. If the documentation was previously submitted and approved by the department, it is not necessary to resubmit the documentation. For activities where grades are awarded, only activities with a grade of C or better can be approved in the coursework component.

Courses

Course code and title. Documented by grade transcript.

Specialised syllabus

Title. Documentation of courses/specialised syllabi taken at UiB is provided by the administration to prepare the case for the department's PhD education committee. Specialised syllabi taken at other institutions must be documented with grade transcripts.

Research courses

Title, duration and location, programme, link to website if applicable. Documentation/confirmation of attendance of course, copy of posters or abstract may be required for the approval of credits.

International conference

The title, location and date of the conference and form of presentation must be specified. The programme for the conference, list of participants (only the page containing the PhD candidate's name) and satisfactory copy of the candidate's presentation or posters from the conference, approved by the supervisory committee, are required for documentation.

Seminar on self-selected subject

Title, location and date shall be provided. Documentation that the seminar is approved in line with further rules at the faculty.

Popular science articles/popular science work

Reference to the articles shall be provided. Documentation confirming the scope, time and place of other popular science activities shall be enclosed.

Progress reporting

For Section 9. Reporting

The department is responsible for reviewing and following up on the annual progress reports for its candidates. This applies to both the research project and coursework component. The reports must be processed by the department's PhD education committee. A summary report from the department shall be submitted to the faculty and processed by the PhD programme board. The PhD programme board reviews the department's summary reports and assesses the need for systematic measures.

The progress reports are to be used to keep track of the candidates' schedule for completion. If the report from the supervisor and candidate describes problems with the progression of the candidate, the relationship between the supervisor and the candidate, or a difference of opinion about when the candidate is to submit, this must be followed up by the department.

Cf. Section 9 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*, deficient or unsatisfactory progress reporting can result in the compulsory termination of the PhD programme before the expiry of the agreement period. Supervisors who fail to comply with their reporting duty may be relieved of their supervisory duties.

Thesis

For Section 10. The PhD thesis

The thesis can be written as monograph or be article-based.

The main results of the thesis must be publishable. During the work on the thesis, part of the work shall, as a rule, be published internationally.

Guidelines on article-based theses

Articles in the thesis must be of an academic standard required for publication in recognised peer-reviewed professional journals.

Number of articles

Requirements for the scope of the thesis must not be higher than that it is possible to submit the thesis and complete the coursework component with a research effort corresponding to three FTEs.

Compilation requirements

Article-based dissertations are to be linked together to form a whole, with an introduction to the work and a summary of the main findings and conclusions. The compilation shall not only summarise, but also bind the issues and conclusions presented in the individual works into an overall perspective, thereby documenting the coherence of the thesis. The candidate shall be the sole author of the compilation.

Co-authorship and co-author declaration

In the event of co-authorship, the candidate's independent efforts are identified and documented through a co-author declaration that clarifies the extent of co-authorship in the individual works. The candidate must be the sole author of the thesis' compilation.

The main supervisor is responsible for obtaining and summarising statements from co-authors into a co-author declaration that must be ready upon submission of the thesis for assessment, including in cases where the main supervisor has not published with the candidate. *See also the heading Application for assessment. For Section 11. Application for assessment*

Guidelines for monographs

A monograph should aim to have a distinct focus and be clearly delimited. It should provide a clear description of the research question, theory use, methods, and procedures for data collection and analysis. It must be evident how the thesis relates to and contributes to other research in the field of study. It must be stated if parts of the monograph have already been published as part of another work.

If a dissertation in the form of a monograph is based on underlying publications with several co-authors, the dissertation shall be submitted with co-author declarations for all relevant publications.

Language of the thesis

For Section 10.4 Language

The thesis must be written in English or Norwegian.

Completion

Assessment

Application for assessment

For Section 11. Application for assessment

The candidate applies to the department to have the thesis assessed no later than 10 weeks before the scheduled public defence. The candidate shall submit the following as attachments to the application:

- co-author declaration on the candidate's efforts in joint works. The co-author declaration shall show an overview of the candidate's independent contributions to joint work and articles. The declaration shall be in English and shall be drawn up and signed by the main supervisor. See also the headline *Co-authorship, for Section 10 The PhD thesis*. In those cases where the candidate submits the monograph, the supervisor will sign a statement showing that she/he has been informed that the candidate will submit his/her thesis.
- a digital version of the thesis.

The coursework component must be finally approved before the candidate can apply for an assessment of the thesis.

Withdrawal of thesis

The thesis shall be assessed as submitted. Cf. Section 11.1 of the *Regulations for the Philosophiae Doctor (PhD) at the University of Bergen*, a submitted work may not be withdrawn until it is finally decided whether it is worthy of public defence for a PhD degree. A thesis is not considered submitted until the candidate has submitted the application for assessment together with the thesis and co-author declaration to the department.

Appointment of assessment committee

For Section 11-3. Appointment of assessment committee

Proposal for assessment committee

The department submits proposals for an assessment committee to the faculty no later than 7 weeks before the scheduled public defence.

The supervisory committee, in consultation if necessary with the head of the research group, submits written proposals for the assessment committee to the department.

The faculty itself approves the application to have the thesis assessed and appoints the assessment committee.

Cf. Section 11.2 of the *Regulations for the Philosophiae Doctor (PhD) at the University of Bergen*, the candidate shall be notified of the proposal for the composition of the committee, and may submit written comments no later than five (5) working days after the basic academic unit has sent the proposal to the faculty. The faculty informs the candidate when the thesis is submitted to the assessment committee.

Appointment of assessment committee

The assessment committee shall consist of at least three members: an internal committee chair and two external equally ranked opponents. The internal committee chair shall normally be employed by the department. The committee shall normally have at least one member from a foreign institution and should normally have both genders represented. See Section 11-2 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen* for further composition requirements. All members must have a doctoral degree

or equivalent academic qualifications. This must be documented if it is not evident from the person's title. Ongoing scientific activities of members who do not have research as their main occupation must be documented.

Impartiality

Opponents cannot normally have commenced collaboration on publication, publications over the last three (3) years, or other collaboration with the candidate or supervisory committee to be considered impartial. The committee chair cannot normally have commenced collaboration on publication, publications over the last three years, or other collaboration with the candidate to be considered impartial. Reference is otherwise made to the legal provisions on impartiality in Sections 6-10 of the Public Administration Act. The department collects the declaration of impartiality from the proposed committee members.

Committee chair

The committee chair is responsible for quickly establishing contact with the external members and informing them of what the work entails and about the Norwegian scheme for the assessment of PhD dissertations. The chair shall ensure that deadlines are met, that the assessment satisfies the requirements for academic quality and that the external committee members are informed about the entire assessment process. The administrator of the committee shall participate actively in assessing the thesis.

Moreover, the chair is responsible for ensuring that all three members sign the recommendation. The recommendation with original signatures from all committee members shall be released no later than in connection with the public defence.

Guidelines for use of time

Within five (5) weeks after appointment, and no later than three (3) weeks before the public defence, the committee normally issues a substantiated recommendation to the faculty on whether the thesis is worthy of being defended for the PhD degree. The PhD candidate is given a deadline of 10 working days to present written comments to the assessment committee's recommendation.

Guidelines for use of time

For Section 12-1. The committee's recommendation and the PhD candidate's remarks

The recommendation shall determine whether the qualitative and quantitative scientific requirements of a three-year Ph.D. degree are met, and whether the thesis is worthy of a public defence.

The assessment committee shall submit a joint written recommendation. The conclusion on whether the thesis is approved or not approved for public defence must be clear. The assessment committee cannot approve a thesis under the condition that changes will be made to the thesis. According to §11-5 can the evaluation committee may recommend that the faculty itself gives permission to minor revisions before the final recommendation from the committee. The PhD candidate will be given a deadline of three months. The final recommendation from the committee will be given four weeks after the revised submission.

The joint coordinated recommendation must contain the following elements:

- subject area of the thesis and the scientific field to which the thesis is a contribution
- compilation of the thesis
- outstanding and important theoretical and/or experimental details
- technical qualities (structure, written presentation and general impression) of the thesis should be briefly commented on
- discussion of the scientific significance of the thesis and key aspects related to theoretical framework, hypotheses, data, methodology and findings.

Any individual comments from each member may be enclosed with the recommendation.

The faculty's processing of the recommendation

For Section 12 The faculty's procedures relating to the assessment committee's recommendation

The assessment committee's recommendation, along with any remarks, will be considered by the faculty's PhD education committee. The dean may approve a committee recommendation when it unanimously concludes that the PhD candidate will be granted permission to defend their thesis.

Guidelines for abstract and press release

For Section 13 The thesis

When the thesis is found worthy of public defence, the candidate shall print or make the thesis available according to further regulations from the faculty.

The PhD candidate must prepare an abstract in English (1-3 pages), with the aim of making the thesis and its results known to national and international researchers. The abstract must accompany the thesis when it is submitted for assessment.

Guidelines for errata

For Section 13-2. Correction of formal errors in the thesis

A PhD dissertation must be assessed exactly as submitted. The candidate can apply once to correct formal mistakes that do not affect the academic content, before the final version of the thesis is printed and/or published in BORA.

Formal errors include correcting spelling/typographical errors and pure grammatical errors, missing punctuation, correcting references, page layout, text format, etc. Correcting formal errors means that the text can be made more meaningful or linguistically correct; the meaning of the text cannot be clarified or altered. Changes to tables are not approved as errata.

The regulation that no substantive changes can be made also applies if, prior to the defence, the candidate is notified that a submitted article has been approved or published by a publisher, but in reworked form. While the defence must be based on the submitted manuscript, the candidate may, in the preface to the thesis printed for the defence, refer to the final journal article.

An approved errata list must always accompany the thesis when changes are made. Neither the corrected version of the thesis nor the errata list shall be submitted to the assessment committee.

The deadline for applying for correction of formal errors is one week after the candidate has received the recommendation. The application must include an errata list showing the corrections the candidate wishes to make in the thesis. The errata list is sent to the department; the department considers whether the requested changes can be approved as formal errors and sends the errata list to the faculty for approval and signing. The errata list is added as an insert to the thesis which is available during the public defence.

Press release

In consultation with the supervisor, the candidate shall write a press release in Norwegian a minimum 3 weeks before the disputation. The press release must be based on the current template, and is sent to the faculty. The faculty is responsible for sending the press release to the Communication Department no later than two weeks before the public defence takes place.

For Section 13-3 Publication

The thesis must be publicly available no later than two weeks before the public defence. In the event of a delay in publication, see Section 13-3 of the *Regulations for the Philosophiae Doctor (PhD) degree at the University of Bergen*.

Trial lecture and public defence (disputation)

Trial lecture

For Section 14-1 Trial lecture

The trial lecture shall be held after submission of the thesis, and shall normally be held no later than 3 weeks before the public defence.

The trial lecture is organised by the department. The head of the department or whoever he/she authorises appoints a separate committee to assess the trial lecture. The committee for the trial lecture shall consist of at least three members, and may have the same chair as the chair of the assessment committee. All of the members can be employed by UiB. All of the members must hold doctoral degrees or equivalent qualifications.

Subject of trial lecture

The subject of the trial lecture is decided by the department. To ensure similar practices, the PhD education committee at the department must be involved in determining the topic of the trial lecture. The topic of the given subject must not be obtained from the key issues in the PhD thesis.

The PhD candidate is informed of the subject of the test lecture ten (10) working days before the lecture.

Contents

The test lecture shall have a length of 45 minutes. The purpose of the trial lecture is to give the PhD candidate an opportunity to document their ability to disseminate research-based knowledge. The lecture should normally be structured so that it can be followed an audience with previous knowledge one could expect to find among master's students in the field of study. Both academic content and the ability to disseminate are emphasised in the assessment of the trial lecture.

Languages

Trial lectures can be held in Norwegian or English. The language of the trial lecture is decided by the department.

Non-approval of trial lecture

If the committee does not approve the trial lecture, the candidate is given an opportunity to try again. The date of the new trial lecture and any new date for the public defence must be arranged as soon as possible and must take place within a timeframe of 10 working days. The new trial lecture will normally be held on the same subject and with the same committee. In cases where the committee does not approve the test lecture, the committee's report shall give the candidate clear instructions on the matters that must be corrected.

An approved trial lecture must be held before the public defence can be held.

Public defence

For Section 14-2. Public defence (disputation)

Place and date

The public defence of the thesis shall be held at the University of Bergen. PhD candidates who have been employed by UNIS may hold their public defence at UNIS by application to the department.

The faculty announces the time and place of the public defence at least ten working days before the public defence takes place. No disputations are held in the month of July.

Opponents

The two external members of the assessment committee act as opponents during the public defence. The opponents hold equal rank during the public defence.

Chair of public defence

The head of the department chairs the public defence on behalf of the dean according to a template for the implementation. If he/she are unable to attend, the public defence may be chaired by the vice-chair or a professor/associate professor at the basic unit. The PhD candidate's supervisors or the administrator of the assessment committee cannot chair the public defence.

The public defence

The public defence is held in English.

The department's member of the committee (committee chair) instructs the other members about the framework for a public defence at UiB. The opponents are expected to both provide an overall academic quality assessment of the thesis, and a more thorough treatment of the thesis or key parts of it. During the public defence, the opponents are equal and shall agree between themselves on who initiates and who concludes the opposition.

If an opponent has assessed the thesis and written a recommendation, but is nevertheless unable to attend the public defence due to unforeseen events, a substitute opponent shall be appointed for the public defence. The substitute opponent can be employed at the faculty. The substitute opponent must be impartial in relation to the candidate.

Provided they have the opportunity, the original opponent writes their questions down for the public defence and sends them to the committee chair. The substitute opponent conveys these questions during the public defence. If the original opponent does not have an opportunity to write down questions, the substitute opponent must become familiar with the thesis, and participate as an opponent during the public defence. A substitute member must also be brought in if an internal member of the committee cannot participate.

Procedures for the public defence

The chair of the public defence opens the disputation.

The PhD candidate

The PhD candidate presents their scientific work, both objectives and findings/results before the scientific discussion starts. The presentation should last approximately 30-40 minutes.

The opponents

Two members of the assessment committee act as opponents. The distribution of the tasks between the opponents is agreed in advance and communicated to the chair of the public defence.

The opponent who speaks first gives a short summary (5-15 minutes) in which the PhD candidate's scientific work is placed in an international context. He/she then proceeds to examine the PhD candidate.

Afterwards, the other opponent examines the PhD candidate.

The chair of the public defence then takes questions from the auditorium. Other persons present who wish to comment ex auditorio must notify the defence chair during the disputation within the time frame determined by the chair.

After the defence has been completed, the assessment committee holds a short meeting. The defence chair then shares the assessment committee's assessment of the public defence.

The thesis must be available to the audience at the public defence.

Result of the public defence

Upon conclusion of the defence, the assessment committee signs a report on a special form. The report must be submitted to the department. If the public defence is not approved, the recommendation must be justified.

Quality assurance

Evaluation system for the PhD programme

UiB has developed a quality assurance system to help ensure that PhD candidates complete theses of high academic quality and ensure that the education is carried out within the prescribed time limit as far as is possible. The quality assurance system shall also help ensure that PhD theses from the University of Bergen adhere to accepted standards of good research practice and applicable regulations.

Composition of the PhD programme board

The programme board consists of the chair (Vice-Dean), one representative from each of the departments (chair of the negotiation committee at the department) and two PhD candidates. The faculty administration provides the secretarial function for the programme committee.

Evaluation system for the PhD programme

The faculty is responsible for the elements in the quality assurance system that are delegated to the programme level. The PhD programme board follows up this responsibility in collaboration with the faculty management.

Course evaluation

All courses at PhD level at the Faculty of Mathematics and Natural Sciences will be evaluated every three years. The unit (the faculty or department) that is responsible for implementation of the individual course is responsible for carrying out the evaluation, and for reporting to the PhD programme board within the set deadline.

Evaluating the framework of the coursework component and course portfolio

When necessary, the PhD programme board annually assesses the framework for the coursework component and the scope of the course portfolio, and the need to change the framework, create or discontinue courses.

PhD programme report

The PhD education committee at the department annually prepares a PhD programme report that includes key figures and provides a status update from the previous year. Any issues at the department are followed up with dialogue meetings between the faculty and the department.

The faculty's PhD programme report is prepared annually by the faculty based on the departments' reports, and constitutes a basis for assessing whether measures should be introduced in the PhD programme.

Progress reporting

The annual progress report from the individual candidate and the main supervisor is reviewed by the departments, which adopts follow-up and introduction of measures in the individual PhD course. The PhD programme board reviews the department's summary reports and assesses the need for systematic measures.

Midway evaluation

The midway evaluation provides an overview of the progress of an individual PhD course and will reveal any delays with regard to the planned progress. The department that the candidate is affiliated with is responsible for following up candidates where a worrying level of progression is revealed in the midway evaluation.

Candidate survey

All PhD candidates that have completed the programme are given the opportunity to evaluate the PhD programme in connection with the doctoral degree awards ceremony. The faculty analyses the results of the candidate survey with a view to taking possible steps.

Delay and dropout survey

Every three years, a delay and drop-out survey is conducted, where information is obtained from those who are delayed or who have dropped out of the PhD programme. The faculty analyses the results of the survey and prepares any measures in cooperation with the PhD programme board.

Programme evaluation

Every six years, an external committee, appointed by the faculty, will examine the PhD programme in its entirety: information to potential applicants, admission, measures underway and the quality of the completed research.

The purpose of the evaluation is to provide advice on the potential for improvement, in terms of throughput and quality.