

University of Turku
 Faculty of Mathematics and Natural Sciences
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DOCTORAL TRAINING AT THE FACULTY OF MATHEMATICS AND NATURAL SCIENCES

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GENERAL

This document regulates and describes the scientific postgraduate education (called doctoral training in this document) offered at the Faculty of Mathematics and Natural Sciences at the University of Turku. This document applies to all students pursuing postgraduate degrees at the faculty, regardless which doctoral programme they belong to at the University of Turku.

Decisions regarding the faculty's postgraduate education are prepared by the coordinator, the Head of Student and Academic Affairs and the Head of Administration together with the faculty's Working Group for Educational Development, management teams of University of Turku Graduate School (UTUGS) doctoral programmes representing the faculty's disciplines, the faculty's departments and the faculty's management team. Postgraduate students are represented in the faculty's Working Group for Educational Development and in the management teams of the doctoral programmes. Decisions regarding postgraduate education are made by deans and the Faculty Council. The Faculty Council grants the permission for the public defence of the thesis and grades both the doctoral and the licentiate theses.

The Faculty of Mathematics and Natural Sciences at the University of Turku offers postgraduate degrees in natural sciences and technology. The postgraduate degrees in Natural Sciences are the **Licentiate of Philosophy** and **Doctor of Philosophy**. The postgraduate degrees in Technology are the **Licentiate of Science (Technology)** and **Doctor of Science (Technology)**. Most postgraduate students complete a doctoral degree directly after their Master's degree. The licentiate degree is primarily intended for professional accreditation.

FIELDS OF RESEARCH

The faculty offers postgraduate degrees in the following disciplines and their focused research fields:

NATURAL SCIENCES

BIOSCIENCES

- Biodiversity Research (BDIV)
- Biochemistry (BKEM)
- Biology (BIOL)
- MolekulMolecular Biotechnology and Diagnostics (BTEK)
- Ecology (EKOL)
- Food Chemistry (FOOD)
- Evolutionary Biology (EVOL)
- Physiology And Genetics (FYGE)
- Molecular Plant Biology (KABI)
- Cell- and Molecular Biology (SOMO)
- Environmental Science (YMPS)

CHEMICAL AND PHYSICAL SCIENCES

- Physics (FFYS)
- Materials Science (MFYS)
- Theoretical Physics (TFYS)
- Astronomy (TÄHT)

Chemistry (KEMI)

- Analytical Chemistry (AKEM)
- Inorganic Chemistry (EKEM)
- Physical Chemistry (FKEM)
- Natural Compound Chemistry (NKEM)
- Materials Chemistry (MKEM)
- Organic Chemistry (OKEM)
- Radiochemistry (RKEM)

GEOSCIENCES

Geology (GEOL)

- Geology and mineralogy (GMIN)
- Quaternary geology (GMAA)
- Applied geology (GSOV)

Geography (MAAN)

- Physical geography (LUMA)
- Human geography (HUMA)
- Regional geography (ALMA)
- Geoinformatics (GEMA)
- Economic geography (TAMA)

MATHEMATICAL SCIENCES AND STATISTICS

Mathematics (MATE)

- Analysis (AMAT)
- Discrete Mathematics (DMAT)
- Mathematical Modelling (MMAT)
- Applied Mathematics (SMAT)

Statistics (TIMA)

COMPUTER SCIENCES

Computer Science (TKO_)

Bioinformatics (BINF)

TECHNOLOGY

BIOTECHNOLOGY

Biotechnology (DABI)

Food Development (EKEH)

INFORMATION AND COMMUNICATION TECHNOLOGY

Information and Communication Technology (DTEK)

Electronics (DELT)

Software Engineering (DOHT)

Communication Engineering (DTIL)

1. ADMISSION TO POSTGRADUATE STUDIES

GENERAL PREREQUISITES

Postgraduate students must have a relevant Master's degree or an equivalent master's level degree from a university of applied sciences or an equivalent suitable foreign qualification, which in the country in question would entitle them to a similar level of higher education and which has provided them with sufficient knowledge and skills to carry out postgraduate studies in the field of research. Other candidates may also be accepted if the faculty considers they possess sufficient knowledge and skills for the studies.

APPLYING

The primary route to postgraduate studies is through the faculty's departments, and through the departments' researchers and their research groups. By creating personal connections with the professor and other researchers in the field of research of the planned licentiate or doctoral thesis, the prospective postgraduate student has the best chances to prepare a viable plan for postgraduate studies.

Applicants for the faculty's postgraduate studies must fill in an application form and deliver it to the faculty. Admission decisions are made by the faculty.

The application form consists of the following parts:

- the applicant's personal information and his/her previous degree/studies
- the field of research of the degree to be completed and the doctoral programme
- the topic or subject matter of the doctoral thesis or the licentiate research
- a research plan and an account of the planned funding and schedule of the studies
- postgraduate studies supervisor(s), research director and a possible thesis advisory committee
- preliminary postgraduate study plan
- the department's statement on the application
- the doctoral programme's statement on the application

As the main rule, those who have been admitted to an international doctoral programme can be admitted with the same application as the faculty's postgraduate student. If needed, the application is complemented for the faculty's acceptance.

In case the degree is in a foreign language, the application must be complemented with an English translation in addition to a copy of the degree certificate. Before receiving their study entitlement, successful candidates must provide the faculty office with the original certificates of the degrees, studies and other achievements on which the admission decision was based. It is the responsibility of the doctoral thesis' research director to ensure that the postgraduate student has sufficient language skills for carrying out postgraduate studies.

ADMISSION CRITERIA

Applicants are selected on the basis of the information presented in the application and its appendices. Postgraduate applicants are required to have completed the advanced studies in the

Master's degree with a "Good" grade or equivalent (Grade 3 in the [Finnish grading system](#)). If this is not the case, or if the subject of the Master's degree differs from the field of research of the intended postgraduate studies, candidates will be asked to supplement their knowledge and skills to achieve the required level. Admission is also dependent on the proposed research topic fitting within the faculty's and its departments' fields of research and the faculty possessing the necessary resources for teaching and supervision.

The application is made in collaboration with the staff of the department and it is complemented with a statement from the department to whose field of research the degree belongs. The decision on admission to postgraduate studies is made by the dean responsible for the faculty's postgraduate education. The student admission decision in the faculty is prepared by the coordinator.

RESPONSIBILITIES OF THE POSTGRADUATE STUDENTS

The postgraduate student has the primary responsibility for the progress of his/her studies. The responsibilities of the postgraduate student are defined as follows:

- the student carefully prepares for the meetings and follows the agreed timetables;
- the student completes postgraduate studies independently with the supervisor's support;
- the student annually participates in the agreed number of postgraduate courses and ensures that they are appropriately registered;
- the student is responsible for the progress of his/her research work and for informing the supervisor and the doctoral programme on the progress made according to the agreed reporting schedule and in the agreed way;
- the student informs the supervisor (thesis advisory committee) of all the changes that considerably affect the working conditions, the progress of the thesis project or keeping the agreed schedule.

PASSIVE REGISTER

If a postgraduate student does not actively pursue studies, his or her right to study will be declared passive (University of Turku Regulation on Studies, Section 8). The postgraduate student's right to study will be declared passive if he or she does not complete any courses for three academic years or if the student does not participate in supervision according to what has been agreed. The right to study will also be declared passive if the student has enrolled as a non-attending student or neglected to enrol during the last three academic years. The right to study remains hidden in the passive register, which means that the right to study can be reactivated. The passive register does not mean that the student completely loses the right to study.

2. PURSUING A DOCTOR OF PHILOSOPHY OR A DOCTOR OF SCIENCE (TECHNOLOGY) DEGREE

To achieve a PhD or DSc (Tech) degree, students must:

- 1) Complete a total of 60 credits of studies specified in the postgraduate study plan.

The credits must form an acceptable entity supporting studies and research work in the field of research and should prepare the student for carrying out the work of a researcher and other demanding expert tasks. The studies may comprise courses from the faculty or from another institution or organisation; familiarizing with the literature; study trips or attendance in scientific conferences; and publications not included in the thesis. Studies may also include general training events for researchers, as well as courses or coursework from other subjects that are related to the field of research or the thesis. Basic-level studies may only be included in well-justified cases.

It is recommended to include approximately 6-10 credits of general postgraduate studies offered by the University of Turku Graduate School in the degree, such as studies in the philosophy of science, research ethics, higher education pedagogy, scientific communication, language studies, project work or management.

Postgraduate studies may not include studies already contained in the Master's degree; this applies to those who have completed their Master's degree after 1 August 2009.

2) Complete and publish a doctoral thesis accepted by the faculty after a public examination.

The thesis may be in the form of either a monograph or a compilation of several scientific publications including a summary of the publications (detailing the objectives, methods and outcomes of the research as well as a review of them). The thesis may also contain manuscripts intended for publication, provided that a considerable number of them have been approved for publication in peer-reviewed publication series. If the thesis consists of joint publications, the student's independent contribution to the shared article is detailed in a separate clarification.

Before proposing reviewers, the research director must ensure that the thesis is of the required extent and that the manuscript delivered for pre-examination fulfils the formal requirements for a doctoral thesis.

The aim is that the doctoral degree can be completed in four years of full-time study after having accomplished the Master's degree.

3. PURSUING A LICENTIATE OF PHILOSOPHY OR A LICENTIATE OF SCIENCE (TECHNOLOGY) DEGREE

To achieve a LicPhil or LicSci (Tech) degree, students must:

- 1) Fulfil the requirements given in section 1 above for doctoral degrees.**
- 2) Complete a licentiate thesis accepted by the Faculty Council.**

The thesis may be a compilation of several scientific publications including a summary of the publications (detailing the objectives, methods and outcomes of the research as well as a review of them). The publications may be collaborative, in which case the student's independent contribution

is detailed in a separate clarification. The licentiate thesis may also contain manuscripts intended for publication.

The aim is that it can be possible to complete the licentiate degree in two and a half years' full-time study pace after having accomplished a Master's degree.

4. SUPERVISORS OF THE POSTGRADUATE STUDIES

On admission to the faculty, postgraduate students are appointed a principal supervisor and one to two other supervisors if needed. The principal supervisor should be at least an Adjunct Professor (dosentti) and the other supervisors should hold a doctoral degree. The faculty may change the appointed supervisor upon request by the student, supervisor or the research director.

The duties of the supervisor are, among others:

- to direct the student in planning and completing the postgraduate studies;
- to direct the student in planning and completing the research and completing the thesis;
- to follow the progress of research and postgraduate studies in accordance with the supervision plan;
- to assist the student in making contact with other researchers in the field and with the users of the research;
- to assist the student in applying for funding by providing information on available options.

5. RESEARCH DIRECTOR

On admission to the faculty, postgraduate students are appointed a research director. Faculty appoints the research director based on proposal of the department which is responsible for the research field in question.

The research director may also be one of the supervisors. If this is the case, the student must also have at least one other supervisor or a thesis advisory committee. The research director can be changed upon request by the student, supervisor or the research director.

The duties of the research director are:

- to monitor the progress of the research work and postgraduate studies annually in collaboration with the supervisor;
- to assume responsibility for the scientific level of the degree;
- to ensure that the necessary conditions for the studies are maintained;
- to ensure that the thesis as a whole meets the requirements regarding the extent of theses;
- to make a proposal regarding the establishment of a possible thesis advisory committee;
- to make a proposal regarding the examiners of the licentiate thesis or the reviewers, opponent and chairperson (custos) of the doctoral thesis;

- to provide the faculty with a statement approved by the supervisor, research director and student indicating the author's contribution to the research if the thesis contains joint publications. The statement must also tell whether a part of the thesis has earlier been used in another thesis or if such use is being planned;
- to ensure that the intended final version of the licentiate or doctoral thesis is delivered to the examiners and to the faculty (as a pdf file to sci@utu.fi) by the student, supervisor or research director immediately after the examiners have been appointed;
- to ensure that the doctoral thesis is delivered to the opponent by the student, supervisor or research director immediately after the opponent has been appointed;
- to assume responsibility for an electronic originality check of the thesis using a plagiarism detection system approved by the University.

6. SUPERVISION PLAN

The student and the supervisor make a supervision plan on the application form, determining the responsibilities and duties of each party, and their commitment to the cooperation.

Doctoral students can have a thesis advisory committee which is acquainted with the subject matter. The thesis advisory committee convenes at least once a year on the student's initiative. The student must prepare well for the thesis advisory committee meetings in order to present his or her research and its progress to the group.

7. REGISTERING STUDY ATTAINMENTS

Completed parts of study attainments in postgraduate studies are registered at the departments. Students must ensure that attainments completed elsewhere are also timely recorded in the register. Studies completed outside of the faculty, attendance at conferences, publications, etc. must be recorded in such a way that the details of the original attainment are easy to trace.

8. EXAMINATION OF THE DOCTORAL AND THE LICENTIATE THESIS, AND PERMISSION FOR THE DEFENCE OF THE THESIS AT A PUBLIC EXAMINATION

The dean appoints at least two reviewers for the doctoral thesis, as well as one or more opponents and a custos for the public examination on the proposal of the research director. The thesis reviewers and opponent(s) (hereinafter: examiners) should be appointed from outside the student's own university. The examiners should be Adjunct Professors or have equivalent scientific merits. In addition, the examiners should represent different organisations and preferably different countries. The examiners must be external in relation to the thesis, and they must not have written joint publications with the author of the thesis.

The Faculty Council grants the permission for the defence of the thesis at a public examination on the basis of the reviewers' statement. Getting the permission for the defence requires that the student has accomplished all studies required in a doctoral degree and that he or she has delivered an application for the postgraduate degree certificate to the faculty. If the doctoral candidate has been admitted into postgraduate studies before 1 August 2012, the transitional period on completing the studies continues until 31 December 2013.

The custos reports to the faculty as to whether the correct procedure was followed at the public examination. The custos does not take part in the grading of the doctoral thesis.

The dean appoints at least two examiners for the licentiate thesis on the proposal of the research director. One of the examiners must represent the department to which the field of research belongs. The other examiner should come from outside of the home university. The examiners should be Adjunct Professors or have equivalent scientific merits.

The faculty sends the examiners and the custos the information that they have been appointed, instructions, and the possible clarification on the joint publications.

Neither the supervisor, the research director, the co-authors of any collaborative publications in the thesis, nor members of the thesis advisory committee may act as examiners. A reviewer may not act as an opponent. The grounds for disqualification given in Section 28 of the Administrative Procedure Act (434/2003) must be taken into account in the appointment of examiners and in the examination and acceptance of theses.

Prior to the appointment of reviewers and opponents for a doctoral thesis and prior to the appointment of examiners for a licentiate thesis, the author of the thesis is allowed to make a statement on the issue.

A language examiner may be appointed to check a thesis written in a language other than Finnish or Swedish.

In any deviation from these instructions, the research director must give written grounds for his or her proposal.

EXAMINERS' STATEMENTS AND STUDENT'S RESPONSE

The reviewers of a doctoral thesis and the examiners of a licentiate thesis must provide their statement on the thesis within two months of being appointed. The opponent(s) must provide their statement within one month of the public defence. The examiners must give separate statements. If the statement is delayed, the faculty will contact the examiners or opponents if needed.

Prior to granting the permission for a public defence, the author of the doctoral thesis is given the opportunity to respond to the reviewers' statements. The author may also respond to the opponent's statement prior to the grading of the doctoral thesis. Prior to grading the licentiate thesis, the author of the thesis is given the opportunity to respond to the examiners' statements.

9. GUIDELINES FOR DOCTORAL CANDIDATES

The University of Turku Graduate School has guidelines for its doctoral students on its website *Guidelines for the Doctoral Candidate* (<http://www.utu.fi/en/research/dissertations/guidelines-for-the-doctoral-candidate/Pages/home.aspx>), which contains information on publishing and printing the thesis, booking a lecture hall for the public examination, reporting on the public examination, printing costs and funding, the procedure at the public examination etc. These instructions are complemented by the faculty's own instructions, which are sent to doctoral students when they are notified of the faculty's decision to appoint reviewers. Instructions can also be collected from the faculty office.

10. GRADING OF THE DOCTORAL AND LICENTIATE THESIS

The Faculty Council decides on accepting doctoral and licentiate theses. Doctoral theses are graded as "accepted with honours", "accepted" or "rejected". The grading of doctoral theses is performed on the basis of the statements from the official examiners. If all examiners estimate in their statements that the doctoral thesis is on the same level as the top 10 % of theses in its field internationally, the thesis can be accepted with honours.

Licentiate theses are graded as "accepted" or "rejected". The faculty will either accept or reject the licentiate thesis on the basis of the examiners' statements.

GRADING CRITERIA

At least the following items must be considered in grading a doctoral thesis and, where applicable, licentiate thesis:

- the significance, originality or novelty of the research setting in relation to other completed and ongoing research in the field in question;
- the justifiability of the chosen research methods, the originality of the methodology and the development of new methods;
- the quality, impact and theoretical or practical significance of the research results;
- proof of familiarity with the field of research in question and the candidate's ability to critically examine his or her own and other research;
- the coherence, clarity and other issues concerning the style of the presentation; and
- the ability of the author to defend the research in the public examination.

RECTIFICATION OF GRADES

Candidates may make a request for the rectification/correction of their doctoral or licentiate thesis grade to the Faculty Council within 14 days of receiving the grade.

11. DEGREE CERTIFICATE

In order to receive the degree certificate, the candidate must fill in an application. The application document can be printed from the faculty's website, or it can be obtained from the faculty office. The student marks on the transcript of studies the courses that he or she has completed as

postgraduate studies to be included in the degree. The application for the postgraduate degree certificate must be delivered to the faculty before the permission for the public defence can be granted (If the doctoral candidate has been admitted into postgraduate studies before 1 August 2012, the transitional period on completing the studies continues until 31 December 2013). The degree certificate is written immediately after the approval of the doctoral thesis.

The field of education, subject and grade of a licentiate thesis or doctoral thesis is mentioned in the certificate. When the degree is taken from some focused field of research that has been mentioned at the beginning of this document (the ones marked with lines in front), the focused field will be mentioned on the certificate in addition to the discipline. Otherwise only the discipline is mentioned. Upon request, an English translation of the degree certificate can be provided.

12. REGISTERING AS A POSTGRADUATE STUDENT

Postgraduate students must register as present at the university each academic year. Registration is dependent on the faculty granting the student the right to pursue postgraduate studies. All postgraduate students in the faculty's doctoral training must register regardless of the institution or organisation in which they pursue their studies.

13. VALIDITY

This code of conduct comes into effect on 1 August 2013 and it rescinds the instruction *The Doctoral Programme of the Faculty of Mathematics and Natural Sciences and its Practices* which came into effect on 1 September 2011. As for students who were admitted to study when the rescinded regulations were valid, the prior regulations can be followed when applicable.