SCIENTIFIC DOCTORAL EDUCATION

Institute of Biomedical Technology (IBT)

DOCTORAL STUDY GUIDE
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1. INTRODUCTION

This doctoral study guide is aimed at all doctoral students studying at the Institute of Biomedical Technology (IBT) at the University of Tampere. You can find this study guide both in English and Finnish online at http://www.uta.fi/ibt/postgraduate_studies.html.

The Government Decree on University Degrees (794/2004) stipulates which undergraduate, graduate and postgraduate degrees are offered at universities. The Institute of Biomedical Technology offers the following postgraduate degrees:

– Licentiate of Philosophy and Doctor of Philosophy
– Doctor of Medical Science

At the University of Tampere, studies towards both a licentiate degree and a doctoral degree are called doctoral studies. Doctoral studies consist of doctoral courses specified in the student's personal study and supervision plan plus a licentiate thesis or doctoral dissertation. At IBT, the fields of study offered at the doctoral level are the same as the subjects taught.

Studies are calculated in ECTS credits. On average, a student should complete 60 ECTS credits per academic year; this corresponds to roughly 1600 hours of work performed by the student.

2. HOW TO EARN A DOCTORAL DEGREE: A SUMMARY

This study guide covers the personal study and supervision plan in more detail in section 5 below, doctoral dissertation and its public defence in sections 6 and 7, and the licentiate thesis in section 8.

2.1. Admission

To apply, the following is required:

– Choose the field of your doctoral studies and find a supervisor.

– Together with your supervisor, propose members for the dissertation follow-up group.

– Submit an application form, a personal study and supervision plan and a research plan (both plans approved by your lead supervisor). The IBT Board of Doctoral Studies (BDS) will process these plans as part of your application.

If your studies will involve animal testing, patient research or register research, you must enclose ethical evaluations or the necessary research permits with your research plan. Both you and your supervisor(s) are responsible for ensuring that the relevant evaluations and permits are applied for before your research begins. Permission documents from the relevant ethics committees must be submitted together with your dissertation for preliminary examination.

– The application and appendices must be submitted to the BDS, which processes applications once a month. For more detailed instructions on drawing up the appendices, please see the application form. IBT decides each year whether its applicants will participate in the call of applications organised by the University's Doctoral School or if the application procedure should be organised in some other way.

Once the applications are submitted, the BDS processes them and makes a proposal, and the Dean decides who will be admitted.

The application form can be accessed at http://www.uta.fi/ibt/postgraduate_studies.html or picked up at the IBT office.

For more information about the Ethics Committee at the Pirkanmaa Hospital District, please visit http://www.pshp.fi/default.aspx?nodeid=10079&contentlan=1 (in Finnish only).
For more information about the test animal course, please see

2.2. Enrolment

When applicants are admitted to a doctoral programme, IBT sends them enrolment instructions. When students have enrolled as ‘present’, they receive their basic user account, which allows them to access the IT services offered by the University, including e-mail and the Library's electronic databases. Students may also join the Student Union when they enrol, but membership is optional for doctoral students. If a student decides not to join the Student Union, he/she will not be charged any fees. However, members enjoy several student discounts. For more information about what the Student Union can offer doctoral students, please visit www.tamy.fi. Please note that not all student discounts and benefits apply to doctoral students.

All students must enrol at the University at the beginning of each academic year until they complete their degree.

2.3. Doctoral Studies and Doctoral Dissertation

A full-time doctoral student should generally be able to complete a doctoral degree in four years. A doctoral degree programme consists of a doctoral dissertation and doctoral courses, seminars and other activities. Each student must draw up a personal study and supervision plan together with his/her supervisor(s). As doctoral courses, seminars, etc. are designed to support the dissertation process, it is recommended that students start taking them as early as possible. The doctoral dissertation is written under the supervision of the student's supervisor(s) and the follow-up group.

2.4. Appointing Preliminary Examiners

When a doctoral student has written his/her dissertation manuscript and filled in the application for permission to publish, he/she submits both these documents to the BDS, which then appoints a few members to familiarise themselves with the manuscript. After these members have read the manuscript, the BDS proposes preliminary examiners, whom the Dean appoints.

2.5. Permission to Publish

Once the preliminary examiners have submitted their reports, the IBT Executive Board decides whether the student should be granted permission to publish and, if yes, appoints an opponent and custos for the defence proceedings. During the IBT Board's current term of office, 15 February 2011 to 31 December 2013, the Dean is authorised to grant permission to publish if the preliminary examiners' reports are favourable. For more information about publishing a dissertation, please see section 6 below.

2.6. Public Defence

Dissertations are examined publicly during the public defence proceedings. The doctoral candidate must book a lecture hall and let the IBT Office know the room number and the date of the public defence well in advance. The candidate must also submit ten copies of his/her dissertation to the IBT Office at least ten days prior to the date of the defence.

2.7. Grading a Dissertation

The opponent submits a written evaluation of the dissertation and of how well the candidate defended himself/herself at the defence. Based on the evaluation, the IBT Board decides whether the dissertation is accepted or not and gives it a grade.
2.8. Doctoral Degree Certificate

A student’s supervisor(s) must approve the student’s courses, and IBT must confirm that they are relevant to the degree and that the student has completed them. Once the student has successfully completed the required number of credits and defended his/her dissertation, IBT awards the student a degree certificate.

3. ADMISSIONS

3.1. Eligibility

According to section 37 of the Universities Act (558/2009), a person must have received one of the following to be eligible for admission to doctoral studies:

1) an applicable higher university degree
2) an applicable higher polytechnic degree
3) an applicable education completed abroad which in the awarding country gives eligibility for corresponding higher education.

The Universities Act further stipulates that a university may require a doctoral student to take supplementary courses to acquire the knowledge and skills needed to earn a doctoral degree in the arts or sciences.

According to the Government Decree on University Degrees (Decree 794/2004), the intent behind doctoral education is that the student:

1) becomes well-versed in his/her own field of research and its social significance and gains knowledge and skills needed to apply scientific research methods independently and critically and to produce new scientific knowledge within his/her field of research;
2) becomes conversant with the development, basic problems and research methods of his/her own field of research; and
3) gains such knowledge of the general theory of science and of other disciplines relating to his/her own field of research as enables him/her to follow developments in them.

Section 22 of the Decree stipulates that, to be awarded a doctoral degree, a student must

1) complete the required doctoral studies,
2) demonstrate independent and critical thinking in the field of research, and
3) write a doctoral dissertation and defend it in public.

According to section 8 of the University's General Regulations Governing Degrees, a person admitted to study for a degree in the arts or sciences is required to have an appropriate higher university degree or a corresponding degree earned in another country. IBT may also accept other qualifications.

The General Regulations Governing Degrees also stipulate that personal study and supervision plans and the school’s teaching and supervision resources must be taken into consideration in the doctoral student admissions process.

At the University of Tampere, doctoral education is organised by the University's Doctoral School, which is made up of the schools’ doctoral programmes. Each doctoral student is admitted to a doctoral programme, and through that, he/she also belongs to the Doctoral School. IBT offers one doctoral programme: the Doctoral Programme in Biomedicine and Biotechnology.
3.2. Admissions Criteria

Doctor of Philosophy

For doctoral studies leading to the Doctor of Philosophy degree, IBT may admit applicants who have

1) earned a Master's degree in Finland
2) earned a Master's degree or a corresponding degree in a country other than Finland
3) demonstrated their knowledge in some other way.

Doctor of Medical Science

For doctoral studies leading to the Doctor of Medical Science degree, IBT may admit applicants who hold the Finnish degree of Licentiate in Medicine or a corresponding degree from an institution of higher education abroad.

Licentiate of Philosophy

According to section 23 of the Government Decree on University Degrees (794/2004), a doctoral student may apply for the licentiate degree after he/she has completed the postgraduate studies required for a licentiate degree as determined by the University. An integral part of the licentiate degree is the licentiate thesis, through which the student must demonstrate that he/she is well-versed in his/her own research field and can apply research methods independently and critically.

Students take the same number of doctoral courses for the licentiate degree and the doctoral degree.

IBT issues more specific admissions criteria and selects the students to be admitted. The Board of Doctoral Studies (BDS) assesses the ability and commitment of doctoral students on the basis of the following principles:

- The innovativeness of the research topic, the realism and clarity of the research plan, and the feasibility of their implementation
- The suitability of the research topic in the doctoral programme
- The scientific and practical relevance of the research topic
- The student's success at undergraduate and graduate level
- The student's methodological and theoretical abilities
- The student's international competence and the language proficiency necessary to complete the doctoral programme
- The availability of competent supervision

If the BDS considers it necessary, it may assess the level of promise and motivation demonstrated by the applicant by interviewing him/her.

Doctoral students may apply to have their dissertation published even before they have finished their Master's degree. In such cases, IBT may grant or deny a student permission to publish.
4. DOCTORAL STUDIES

All three doctoral degrees offered at IBT consist of the following parts:

- Doctoral courses approved by the student's lead supervisor: 30 ECTS credits
- Doctoral dissertation and its public defence

In addition to the doctoral courses offered at the Kauppi campus (by the Institute of Biomedical Technology [IBT], the School of Health Sciences [HES] and the School of Medicine [MED]), students may take relevant courses offered by other schools or the University's Doctoral School.

For more information about the doctoral courses offered at the Kauppi campus, please visit http://www.uta.fi/hes/en/doctoralstudies/courses.html.

For more information about the courses offered by the Doctoral School, please see http://www.uta.fi/english/doctoralschool/index.html. New postgraduate students are automatically subscribed to the e-mail list for postgraduate students at the Kauppi campus. All students have to do is let the school know if their contact information changes.

Please note that doctoral courses must always have the lead supervisor's approval. For examples on the maximum number of credits awarded for a course or other activity, please see Appendix 2.

5. STUDY AND SUPERVISION PLAN

Each doctoral student draws up a personal study and supervision plan together with his/her supervisor(s). It is recommended that this plan be prepared as early as possible and that it is detailed and tailored from the beginning. Courses should be selected in a way that best advances the dissertation process, and they should form a relevant whole. The Board of Doctoral Studies (BDS) processes each personal study and supervision plan along with the student's application.

6. DOCTORAL DISSERTATION

6.1. Requirements

In his/her dissertation, a student must demonstrate an in-depth knowledge of his/her research field, connected fields and the general theory of science, as well as the ability to apply research methods independently and critically and to produce new scientific knowledge.

6.2. Field of Study

Dissertations are written on one of the subjects taught at IBT. In practice, the supervisor's field will determine the field of the dissertation's topic. If a student has multiple supervisors who represent different fields, the student must choose one field. For a complete list of subjects taught at IBT, please see Appendix 3.

6.3. Supervisor

Each doctoral student must find a supervisor (a professor or docent), and the student and supervisor must discuss where research will be conducted and on what topic, which methods will be used, and how feasible the plan is.

Each doctoral student has one or two supervisors. At least one supervisor must be a professor or docent at the University of Tampere (active emerita or emeritus professors may act as supervisors as well), and the other supervisor must have a PhD in a relevant field. In exceptional cases, a docent employed by another university may act as a supervisor if he/she is a researcher at the
The supervisor's role in the dissertation must be substantial: for example, several articles should carry the supervisor's name.

The supervisor(s) must ensure that the dissertation meets the criteria for the content, quality and form required of a dissertation. The lead supervisor must also approve the doctoral student's personal study and supervision plan as well as his/her doctoral courses (30 ECTS).

### 6.4. Follow-up Group

A follow-up group is established for each postgraduate student to assist him/her in the dissertation process. The purpose of the follow-up group is to introduce more expert opinions, give feedback and improve the quality of the dissertation. The members of the follow-up group are the supervisor(s), researchers working in the doctoral programme, and researchers from other universities, companies or research institutes. All in all, the follow-up group has two or three experts in addition to the supervisor(s). At least two of the expert members must hold a PhD.

The follow-up group should be set up early on in the dissertation process to guarantee that the group can fulfil its purpose and support the student sufficiently. This way, members can also give feedback on the topic, research questions and methods at an early stage. The follow-up group meets at least once a year and is convened by the doctoral student. The doctoral student must ensure that a memorandum is written of each meeting.

If the Board of Doctoral Studies (BDS) considers it necessary, it can request that the follow-up group report on the progress of the dissertation. The report must include an evaluation of the content and form of the dissertation, a short review of the scientific quality of the research, and other possible remarks. If BDS members wish, they may participate in the follow-up group's meetings.

### 6.5. Preliminary Examiners, Opponent and Custos

Preliminary examiners must be at least docent-level objective experts. A researcher working in the field of the dissertation at the University of Tampere, a person who has acted as a supervisor or a member of the follow-up group in connection with the dissertation in question, or a person who could in some other way be considered unacceptable due to the likelihood of bias may not serve as a preliminary examiner. If the dissertation is a monograph, three preliminary examiners are appointed.

An opponent must be a renowned expert in his/her field, but must also be considered acceptable.

The preliminary examiners and opponent may not have published co-authored articles or cooperated closely with the postgraduate student or the supervisor(s) for the past three years. If they have collaborated with the student or supervisor, the BDS must evaluate whether or not that person may act in his/her position. At least one of the experts must be familiar with the Finnish or Scandinavian dissertation process and the conventions of postgraduate education.

The custos represents the University and must be a professor or docent at the University of Tampere. The custos may even be an emerita or emeritus professor if he/she has acted as the student's supervisor. The IBT Board appoints the preliminary examiners, opponent and custos.

### 6.6. Dissertation Form

A doctoral dissertation is an independent scientific thesis on a topic relevant to the degree. A dissertation can be a unified study (a monograph) or an integrated entity of scientific publications or manuscripts approved for publication paired with a summary article (an article-based dissertation).

A monograph is based on the previously unpublished results of independent research, and it is written by the doctoral student alone. In an article-based dissertation, the summary article must be
written by the doctoral student, but the articles may be co-authored if the doctoral student's independent contribution can be shown. In general, an article may be published in one dissertation only, and it usually is the first author who publishes the article in his/her dissertation. If another author wants to include the article in his/her dissertation, each author and the dissertation supervisor must grant permission in writing. A dissertation may include articles published in another dissertation if there is a good reason for it. If a dissertation includes more than one article that has been published in two or more dissertations, the author must apply for permission from the BDS before preliminary examiners are appointed.

If the same article is published in two or more dissertations, the doctoral students and their supervisors must submit a written report to the BDS before preliminary examiners are appointed. The report must describe the contribution of each student and be enclosed with the dissertation manuscript which is eventually sent to the preliminary examiners. An article may even be a systematic literature review if it produces new knowledge. The literature review may not, however, be exclusively descriptive: it must result in an analytical synthesis.

All articles included in a dissertation must be published or approved to be published in a peer-reviewed scientific journal or book. The dissertation manuscript may be submitted for preliminary examination even though an article has not been approved for publication. When a doctoral student submits his/her manuscript to the BDS, he/she must enclose a letter of approval for those articles which have been approved for publication but have not yet been published.

An article published as a part of a Master's thesis may be published as a part of a dissertation.

6.7. Writing a Dissertation Manuscript

A dissertation must have a cover page that states the name of the dissertation, the name of the author, the name of the school that gave permission to publish the manuscript as a doctoral dissertation, and the fact that the work is a dissertation. On the back of the cover page, the author must state where research was conducted and the names of the supervisor(s), preliminary examiners and opponent. Dissertations usually include the following sections:

- Table of contents.
- In an article-based dissertation, a list of original communications. If one of the articles is published in another dissertation, the list of original communications must mention this.
- Abbreviations.
- Abstract. The abstract must be one to two pages long, and it must be both in the dissertation language and in Finnish.
- Introduction.
- Literature review. The review presents relevant background information and the current state and development of knowledge and research. A good literature review also serves as an introduction to the dissertation's research questions.
- Aims of the study. An integral part of a dissertation is presenting research questions and a hypothesis.
- An account of research data and methods (Materials and Methods/Patients and Subjects and Methods).
- Results, or in an article-based dissertation, a summary of the results.
- Discussion. A critical review of the results of the study in the light of methods, content and their meaning and in comparison to previous studies.
- Summary and conclusions (and views of the future).
- Acknowledgements.
- References.
- In an article-based dissertation, a list of original communications.

In an article-based dissertation, the results and discussion should summarize the articles and form a synthesis. The results and especially the discussion should not contain direct quotes of the articles, and the summary should not follow the order of the articles too faithfully.
Most dissertations are published both in print and online. As it may not always be possible to append original articles to an online article-based dissertation, the summary article should form an independent and coherent whole, and the author should present the methods, results and discussion in a way that the reader can understand them without reading the original articles. The summary article may include the same pictures and tables as the original articles, but each picture or table must include a full reference to the original article, and the author must have the publisher's permission to use the pictures.

The dissertation must be well-written. If the BDS considers it necessary, it may require proofreading.

For BDS instructions on referencing please see Appendix 5. If the dissertation is published in the Acta Universitatis Tamperensis series, please follow their instructions, which can be found at http://www.uta.fi/kirjasto/tup/index.html.

6.8. Submitting a Manuscript for Preliminary Examination

When a doctoral student and his/her supervisor(s) consider the dissertation manuscript ready for publication, the student submits the manuscript in one complete paper copy and as a PDF file to the BDS. The members responsible for familiarising themselves with the manuscript then read it carefully. If the BDS considers the manuscript ready for preliminary examination, it recommends preliminary examiners, a custos and an opponent to the Dean.

At this point, the student must submit to the BDS an application for permission to publish the dissertation. The application form can be accessed at http://www.uta.fi/ibt/postgraduate_studies.html.

The application must include the following appendices:

1. A one- to two-page summary of the main contents of the study.
2. In an article-based dissertation, a list of original communications. If there are articles that have been approved for publishing but have not yet been published, the author must enclose a letter of approval for those articles.
3. A complete copy of the dissertation manuscript.
4. An account of the doctoral student's contribution to each article describing the author's part in the planning of research, development of methods, collecting data or samples, choosing and examining patients, conducting laboratory tests, statistical analysis, interpreting results, and writing each article. The account, one to two pages in length, must be approved and signed by the student and his/her supervisor(s).
5. The manuscript in PDF file format.

For more information about BDS meeting times and the deadlines for submitting the above-mentioned documents, please see the IBT website at http://www.uta.fi/ibt/.

6.9. Preliminary Examination

The BDS proposes at least two docent-level preliminary examiners in the dissertation's field to the Dean, and the Dean appoints them. The preliminary examiners should not work at IBT. If there is a good reason to allow it, one of the preliminary examiners may be a docent at the University of Tampere, but even in this case his/her main position must be elsewhere.

Preliminary examiners must be objective and they may not have published co-authored publications with the student or the supervisor(s) in the previous three years. After finished examination, preliminary examiners submit a report which indicates whether they consider the manuscript ready for publication. The report should be submitted not later than two months after the examination process began.
Before submitting their final reports, preliminary examiners may require the author to revise the language or form of the dissertation, change its factual content, or conduct further examinations or control studies. A preliminary examiner's report must clearly indicate whether or not the examiner recommends that the student be granted permission to publish and publicly defend the manuscript as a doctoral dissertation: this indication may not be conditional in any way. If a preliminary examiner requires revisions, he/she must subsequently submit a second, final report on the revised manuscript.

The purpose of this preliminary examination is to ensure that the manuscript meets the formal and scientific criteria for the most advanced academic theses. Preliminary examination usually also improves the quality of writing. A preliminary examiner's report should clearly indicate whether or not he/she thinks the research for the dissertation is adequate or whether further examination is needed. The report should contain or comment on the following:

1. An overview of the dissertation: A brief description of the dissertation's content and main findings.
2. Independent contribution: How great is the author's independent contribution to planning and conducting the study?
3. Topic and research questions: How scientifically valuable, original, current and significant are the topic and research questions for future application? How many previous studies have been conducted on the topic?
4. Knowledge of the research field: Is the literature review balanced and extensive enough? Are the references recent and comprehensive? Does the author review literature critically and point out the strengths and weaknesses of previous studies?
5. Data: Is the data of high quality, is there enough of it and is it applicable to the study? Is the comparison material suitable? Has the data been collected well? Has the author personally collected the data? What was the author's role in processing it?
6. Methods: How reliable, applicable, original and challenging are the methods used? Has the author developed new methods or significantly improved existing methods to better fit the study? Is the dissertation based on information extracted from existing data or from routine determinations? Is the statistical analysis of the results adequate? Are the chosen statistical methods applicable to the study?
7. Results and conclusions: Does the author assess the reliability, novelty value and scientific significance of the results? Does the study confirm previous results or does it produce new significant findings? Are the conclusions justified? Can the results be applied in the field of health sciences?
8. The quality of the discussion: Is the discussion objective, critical and clear? Did the author analyse the strengths and weaknesses of his/her work and critically compare it to the literature? Do his/her conclusions support the research questions, results and previous knowledge?
9. Presentation and the communication of ideas: Is the structure logical and balanced? Are the style, language and form appropriate and complete?

At the end, the report must clearly indicate whether or not the preliminary examiner recommends that the student be granted permission to publish and publicly defend the manuscript as a doctoral dissertation. In addition to their reports, preliminary examiners must submit grade proposals on a separate form.

6.10. Publishing a Dissertation

There are several ways to publish a doctoral dissertation. The most common way is to publish it online as part of the Acta Electronica Universitatis Tamperensis series and to print a few dissertations for the public defence and personal use in the Acta Universitatis Tamperensis series published by Tampere University Press. Dissertations may, however, be published in other some series. In any case, an author must request the publisher's permission if he/she wishes to publish already published articles as a part of his/her dissertation.

The author should reserve enough time for the printing process and fix the necessary dates during the preliminary examination with Soile Levälähti, the amanuensis for the Acta series (tel. +358 [0]40 1904 264). For more detailed information, please visit http://uta.fi/kirjasto/en/tup/instructions_acta.html.
The University subsidises printing costs by paying for the School and Library's copies. The printing subsidy is paid after an invoice is presented, but the invoiced amount may not be more than the subsidy granted for the Acta Universitatis Tamperensis series. To receive the subsidy, the author must allow the dissertation to be published online in the Acta Electronica Universitatis Tamperensis series and submit it to the Library as a PDF file.

Authors must submit copies of their dissertation to IBT at least ten days prior to their public defence. If a dissertation is published in a series other than the Acta series, the author must submit ten copies to IBT and three copies to the Library. If a dissertation is published in the Acta series, the printing house will deliver copies to IBT and the Library. The manuscript must include a separate title sheet stating the time, date and place of its defence. The sheet must also state that the dissertation will be presented with the permission of the Board of the Institute of Biomedical Technology.

6.11. Publicity

The dissertation is available on IBT's official noticeboard and online at the University website at least ten days before the public defence is held. Details about the defence and availability of copies of the dissertation are published on IBT's noticeboards and on the University website at least ten days prior to the defence.

All doctoral candidates must fill in a dissertation form online at the Library's website ten days prior to the defence. The form can be accessed at http://www.uta.fi/kirjasto/en/tup/index.html. Doctoral candidates may also submit their photograph to the Library if they wish. The Library will use the details given on the dissertation form to inform the media.


See section 7.


The opponent's report is the final evaluation of the dissertation's scientific value. The report should indicate the following:

1. An overview of the presentation and form.
2. An evaluation of the doctoral candidate's role in the research.
3. An evaluation of the content of the dissertation (stress on the same topics as in the preliminary examiner's report above; see page 15).
4. An evaluation of the public defence and especially of the candidate's ability to defend his/her dissertation, understand the research field and make sweeping, critical conclusions.
5. A grade proposal.

The grade may be either fail, pass or pass with praise. Only exceptionally distinguished dissertations will be graded pass with praise. All examiners, i.e. preliminary examiners and the opponent, submit a grade proposal. The highest grade can be given to a dissertation which belongs to the top 5–10% of all dissertations published in the field in Finland and in which the doctoral candidate's independent contribution is especially significant. The IBT Board will approve the dissertation based on the preliminary examiners' and opponent's statements and grade proposals. If the opponent and at least one preliminary examiner propose the highest grade, the Board may grant that grade.

The opponent must submit his/her written report to the Board and the doctoral candidate not later than two months after the public defence. If the candidate wishes to respond to the report, he or she is entitled to do so under section 44 of the Universities Act (558/2009).
In his/her report, the opponent must also consider the remarks that arise in the discussion that is part of the defence proceedings.

7. PUBLIC DEFENCE

7.1. Date and Place of the Public Defence

A doctoral candidate must announce the date of the defence proceedings to IBT as soon as he/she has fixed it together with the custos and opponent. This way IBT can make the dissertation available ten days before the defence and deliver copies of the dissertation to relevant parties.

The doctoral candidate must book a lecture hall for the defence proceedings. The defence may take place in one of the lecture halls in the Arvo building, B building, T building, Finn-Medi building or M building on the Kauppi campus, or in one of the lecture halls on the main campus. In general, defence proceedings should take place in a University building or a building of the Pirkanmaa Hospital District. If the research is closely connected to a unit outside Tampere, public proceedings may even take place there if the Dean approves it.

7.2. Function of the Public Defence

Doctoral dissertations must always be defended in public. The public defence of a doctoral dissertation serves three distinct functions:

1. It offers an opportunity to publicly and reliably ensure that the doctoral student has written the dissertation himself/herself and that the dissertation meets the basic criteria for a dissertation.

2. It offers the opponent(s), people evaluating the dissertation and other people interested in the subject an opportunity to familiarise themselves with the dissertation by listening to, asking questions of and discussing with the author.

3. It offers an opportunity to make research public in a way that deviates from the norm and is more visible to the public.

7.3. Formalities

The public defence of a doctoral dissertation generally follows certain traditional customs and formal requirements. These customs and formal requirements supplement the official regulations on the examination of a dissertation. Over the course of time, formalities and traditional customs naturally change. For this reason, the main participants in the defence proceedings should always negotiate the arrangements beforehand.

7.4. Dress Code

It is customary for the doctoral candidate, custos and opponent to wear a tailcoat and a black waistcoat (or a uniform without any medals). Women wear black formal wear and no hat. If the opponent and custos consider it appropriate, men may wear a black suit instead of a tailcoat. Alternatively, participants may wear the gown of the University of Tampere. The custos and the opponent must hold their Doctor's caps in their hands when entering and leaving the lecture hall.

7.5. Entrance and Opening the Defence Proceedings

The participants enter the lecture hall in the following order: first, the doctoral candidate; second, the custos; and, last, the opponent(s). In the lecture hall, the custos will sit in the middle, with the doctoral candidate on his/her left and opponent on his/her right. When everyone is in place, the
custos will open the public defence by saying, "As the custos appointed by the Institute of Biomedical Technology, I declare these defence proceedings to be open." The custos then welcomes everyone and introduces the topic briefly. After that, the custos introduces the doctoral candidate and opponent, and the custos and opponent sit down.

7.6. Lectio Praecursoria

The doctoral candidate will remain standing and deliver his/her lectio praecursoria, which may last no longer than 15–20 minutes. This introductory lecture will be given on a topic related to the dissertation, but not on the actual research itself. The doctoral candidate will begin by saying "Honorable Custos, Honorable Opponent(s), ladies and gentlemen." At this point, the candidate may provide copies of the typographical errors list, the introductory lecture or other relevant materials to be handed out to the audience. A non-Finnish opponent will be provided with a translation of the introductory lecture if it is given in Finnish. After finishing his/her lectio praecursoria, the doctoral candidate will say: "I ask you, honoured professor NN (doctor NN, etc.), as the opponent appointed by the Institute of Biomedical Technology, to present the observations you consider appropriate for this dissertation."

The opponent will stand up and give a short response about the dissertation's position and significance in science and other topics of a more general nature. After this, the opponent and the candidate sit down. Even if there are several opponents, only one will give a response.

The introductory lecture and the defence proceedings may be in Finnish, Swedish, the language of the dissertation, or, with the consent of the Dean of the School, in another language.

7.7. Examination

At the beginning of the examination proper, the opponent generally focuses on the methodology and general questions, followed by a detailed examination. If there are several opponents, they may agree to take turns and decide on a "division of labour" beforehand. They may also discuss a topic one of them brings up during the proceedings.

The proceedings may not exceed six hours in length. The custos may suspend the defence proceedings for breaks.

At the end of the examination, the opponent presents a closing statement. The candidate and the opponent stand for this statement.

Once the opponent declares his/her examination to be over, the candidate will stand up to thank the opponent. To initiate the discussion, the doctoral candidate will address the audience and say: "Ladies and gentlemen, I ask those of you who have observations to make on the dissertation presented here to please request the floor from the custos." After this opening, the custos will invite the audience to ask questions or comment on the dissertation. If someone in the audience objects to the dissertation being approved, the objection must be submitted to the Board in writing.

The custos closes the defence proceedings by saying, "I declare these defence proceedings to be closed." The participants then leave the lecture hall in reverse order, i.e. the opponent(s) leave first, the custos second and the candidate last.

8. LICENTIATE THESIS

An integral part of the licentiate degree is a licentiate thesis, with which the student demonstrates that he/she is well-versed in his/her own research field and can apply research methods independently and critically. What applies to a doctoral dissertation applies to a licentiate thesis as well.

A licentiate thesis can also be an integrated entity made up of scientific publications or manuscripts
approved for publication paired with a summary article (cf. an article-based dissertation). The objectives, methods and results of the study must be presented in the summary. Publications may include co-authored publications if the postgraduate student's independent contribution can be shown.

When the author considers his/her licentiate thesis to be ready for examination, he/she must submit the following to the Board of Doctoral Studies (BDS):

1. Three copies of the licentiate thesis.
2. An abstract one to two pages in length. The abstract must be submitted in Finnish and English, and, if the thesis is written in some other language, in that language.
3. A proposal for examiners.

The BDS proposes and the Dean then appoints two examiners who will submit a written report after the licentiate thesis is examined in the licentiate seminar. The reports must be submitted within two months after the seminar is held. The thesis supervisor may act as one of the examiners.

Before submitting their reports, the examiners must discuss possible shortcomings and suggested revisions with the author. The reports must be submitted to the IBT Office and the author. The BDS then discusses the reports in a meeting, and they form the basis for the grade the IBT Board gives the thesis. If the candidate wishes to respond to a report, he or she is entitled to do so under section 44 of the Universities Act (558/2009).

The same grading scale applies for licentiate theses as for dissertations: fail, pass or pass with praise. Only exceptionally distinguished licentiate theses will be graded pass with praise.

9. BOARD OF DOCTORAL STUDIES (BDS)

The term of office of the IBT Board of Doctoral Studies (BDS) is the same as the IBT Board's: three years. The BDS usually meets once a month. It has nine members, and each member has an alternate.

For BDS meeting times and the contact information for the chair and secretary, please visit the IBT website.

10. DOCTORAL PROGRAMMES FUNDED BY THE ACADEMY OF FINLAND

The University of Tampere runs its own doctoral school, which is managed by the Vice Rector responsible for research and the professor in charge of the doctoral courses offered to all postgraduate students. These courses cover topics such as the philosophy of science, argumentation, research ethics, research methods, teaching skills, supervision skills, research skills and work life skills.

The Academy of Finland funds field-specific doctoral programmes, most of which are national. These programmes offer paid positions for postgraduate students so that they can work on their dissertations full-time; these positions are filled after an open call for applications. These national programmes offer courses in the subjects related to the field and in methodology, and they offer funding for taking part in courses or visiting universities in Finland or abroad.

IBT has one national Finnish doctoral programme, which is coordinated by the University of Tampere: the Tampere Graduate Program in Biomedicine and Biotechnology (TGPBB). For more information about the TGPBB, please visit http://www.uta.fi/ibt/tgpbb/index.html.

The other schools located on the Kauppi campus are also members of national doctoral programmes, but these programmes are coordinated by other universities. The programmes include

Biomaterial Graduate School (BGS)
http://www.helsinki.fi/science/bgs/
Drug Discovery Graduate School (DDGS)
http://fpdp.fi/

11. FUNDING

Academy of Finland:
http://www.aka.fi

Pirkanmaa Hospital District (information on research funding in Finnish only):
http://www.pshp.fi/default.aspx?nodeid=10072&contentlan=1

Scholarships by the Centre for International Mobility (CIMO):
http://www.cimo.fi

Grants by the Finnish Cultural Foundation

Grants by the Academy of Finland

The Finnish Funding Agency for Technology and Innovation (Tekes):
http://www.tekes.fi

Subsidies and awards by the Ministry of Education and Culture:
http://www.minedu.fi

EU programmes by the Community Research and Development Information Service (CORDIS):
http://www.cordis.lu

Fulbright scholarships and studying in the USA:
http://www.fulbright.fi

This study guide applies from 1 August 2012.
Appendix 1

From a Postgraduate Student to a Doctor

Applying for Postgraduate Studies
- Your application is processed by the Postgraduate Committee
- Application forms are available online at http://www.uta.fi/ibt/postgraduate_studies.html

Dean grants you the right to study

Enrolment
- The IBT Office sends you the enrolment materials

Taking Postgraduate Courses and Writing Your Dissertation
- The follow-up group meets at least once a year
- The supervisor approves the courses

Appointing Preliminary Examiners
- Submit one copy and pdf-file of your dissertation manuscript and the application for permission to print it
- The application is available online at http://www.uta.fi/ibt/postgraduate_studies.html
- Propose preliminary examiners and an opponent together with your supervisor

The Postgraduate Committee proposes preliminary examiners, whom the Dean then appoints. Submit manuscript to preliminary

Preliminary Examiners' Reports
- Submitted to the IBT Office

The IBT Board grants permission to publish and appoints the custos and opponent

Public Defence
- Book a lecture hall and notify the IBT Office of the time of the defence proceedings
- Submit ten copies of your dissertation to IBT at least ten days prior to the public defence

Entering Postgraduate Courses into the Register
- Submit a list of your courses to the IBT Office for registration. Please make sure the list has your supervisor’s signature on it!

Opponent’s Report
- Submitted to the IBT Office

The IBT Board approves and grades the dissertation

Office staff issue a degree certificate (no application needed)
Appendix 2

PERSONAL STUDY PLAN

A personal study plan is an important part of the application for doctoral studies, which is processed by the BDS. The plan is free-form, but it must adhere to the standing rules on doctoral education.

The personal study plan is enclosed with the application, and it should follow the following models.

<table>
<thead>
<tr>
<th>Study plan for the theoretical education for the degree of Doctor in Medical Science</th>
<th>Study plan for the theoretical education for the degree of Doctor of Philosophy/Licentiate of Philosophy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name</td>
</tr>
<tr>
<td><strong>General courses</strong></td>
<td><strong>Courses and seminar in the major subject</strong></td>
</tr>
<tr>
<td>Course</td>
<td>When will you take this course</td>
</tr>
<tr>
<td>For example:</td>
<td></td>
</tr>
<tr>
<td>– Academic Writing</td>
<td>– ε –</td>
</tr>
<tr>
<td>– Cell and Tissue Culture</td>
<td>– ε –</td>
</tr>
<tr>
<td>– Clinical Research</td>
<td>– ε –</td>
</tr>
<tr>
<td>– Researcher Workshop</td>
<td>– ε –</td>
</tr>
<tr>
<td>– Etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Field-specific courses</strong></td>
<td><strong>Minor studies</strong></td>
</tr>
<tr>
<td>For example:</td>
<td>– Minors can include intermediate and advanced courses and modules in the field or a related field</td>
</tr>
<tr>
<td>– The name and date of a national or international conference, and the number of credits proposed for attendance</td>
<td>– Etc.</td>
</tr>
<tr>
<td>– IBT’s seminars for postgraduate students, time and number of credits</td>
<td></td>
</tr>
<tr>
<td>– Clinic meetings (in specialist training), time and number of credits</td>
<td></td>
</tr>
<tr>
<td>– Courses relevant for the field, specified as above</td>
<td></td>
</tr>
<tr>
<td>– Etc.</td>
<td></td>
</tr>
<tr>
<td>Date and supervisor's signature</td>
<td>Date and supervisor's signature</td>
</tr>
</tbody>
</table>

Below are some examples of the maximum number of credits awarded for a course or some other relevant activity:

– Scientific conferences in Finland or abroad
– A one-day conference where the student gives a poster presentation 1 ECTS credit
– A one-day conference where the student gives an oral presentation 2 ECTS credits
– A two- or three-day conference 1 ECTS credit
– A four- or five-day conference 2 ECTS credits
– The medical specialist degree
  No more than eight ECTS credits’ worth of specialist courses may be included in the degree within that clinical field.
– The degrees of Doctor of Health Sciences and Doctor of Philosophy may include no more than eight ECTS credits' worth of courses.
– IBT’s postgraduate seminars, literature relevant to the field, examinations and essays: the number of credits is stated in the curriculum guide; scientific articles: a maximum of 2 ECTS credits per article.

Appendix 3
SUBJECTS TAUGHT AT THE INSTITUTE OF BIOMEDICAL TECHNOLOGY (IBT)

- Bioinformatics
- Genetics
- Tissue Engineering/Clinical Biomaterials
- Tissue Engineering
- Experimental Immunology and Infections in Children
- Biomedical Engineering and Biotechnology
- Molecular Cell Biology
- Molecular Biology
- Molecular Immunology
- Cancer Biology
- Cancer Genetics
Appendix 4

REFERENCE INSTRUCTIONS

The University Library offers doctoral students the use of RefWorks, a bibliographical management programme, free of charge. With RefWorks, students can create a personal database of references, generate bibliographies, and automatically insert references from their database into their dissertations.

RefWorks allows the writer to choose from hundreds of different citation styles. Styles recommended by IBT include Harvard, APA sixth edition (American Psychological Association), Vancouver, Council of Science Editors (CSE), and Duodecim.

RefWorks can be used if the publication series in which a dissertation is published does not provide separate instructions.

For more information on RefWorks, please visit http://www.uta.fi/kirjasto/en/guides/refworks.html.

Online references should form a separate section in the references. If the URL is informative and traceable, it can act as the reference. The date on which the site was accessed should be inserted in parentheses at the end of the reference. In addition, internet sources should be printed out but not enclosed with the dissertation.

References are arranged as follows:

   Fox (1966)
   Fox (1977a)
   Fox (1977b)
   Fox (1988)
   Fox and Brown (1959)
   Fox and Brown (1980a)
   Fox and Brown (1980b)
   Fox and Wilson (1965)
   Fox, Allen, Brown and Wilson (1977)
   Fox, Allen, Brown and Wilson (1978a)
   Fox, Wilson and Allen (1978b)
Appendix 5

PUBLISHING A DISSERTATION IN THE ACTA SERIES

Choosing the Publication Medium

There are several ways to publish a doctoral dissertation. The most common way at IBT is to publish it online at the Acta Electronica Universitatis Tamperensis series and to print a few copies for the public defence and your personal use in the Acta Universitatis Tamperensis series published by Tampere University Press.

A dissertation can be published in the following formats:

- online in the Acta Electronica Universitatis Tamperensis series and in print in the Acta Universitatis Tamperensis series, in another series, or as a paper copy
- in print in the Acta Universitatis Tamperensis series, in another series, or as a paper copy


The editorial office of the Acta series is located in the Main Library in the Linna building. If you wish to have your dissertation published in the Acta series, please apply using an e-form while your dissertation is undergoing its preliminary examination.

Publication Subsidy

The University subsidises printing costs by paying for the School and Library's copies. The doctoral candidate must pay for any copies that are intended for personal use.

To receive the subsidy, the author must allow the dissertation to be published online in the Acta Electronica Universitatis Tamperensis series and submit it to the Library as a PDF file. The subsidy is only granted for black and white prints. Even if the dissertation is longer than 500 pages, the subsidy will be for a 500-page dissertation only.

Schedule and Number of Copies

Defence proceedings are usually held five weeks after the Board or the Dean has granted permission to publish. In the Acta series, printing takes three weeks, and the dissertation must be online and/or available in print at least ten days before the defence proceedings. Five weeks should then be enough to have the dissertation published and available on time. If a dissertation is published in another series, the printing time may differ. In such cases, the author must agree on a schedule with the publisher. For more information about schedules, please contact the IBT Office.

When a dissertation is published in the Acta series, the printing house delivers copies of the dissertation to the School and the Library. The author can choose to have his/her copies delivered directly or to pick them up at the printing house. The printing house can also deliver the author’s copies to a University address free of charge. The printing house charges a fee for copies delivered by post or freight. If the author wishes to hand out copies of the dissertation at the defence proceedings, he/she must have these copies printed at his/her own cost and ensure they are delivered to the lecture hall where the proceedings will take place.

If the dissertation is published in a series other than Acta, the author must ensure that the School receives ten copies. In such cases, the School then sends three copies to the Library.
The usual print run for dissertations published in the Acta series is 100. Thirty copies are usually reserved for the School, Library and sales, and the rest of the print run is for the author's personal use.

Publication Instructions for the Acta Series

Copyright and Consent to Publication

After the Library receives the doctoral candidate's application, it will draw up a publication contract. In the contract, the author permits the University to publish his/her dissertation manuscript in the Acta Universitatis Tamperensis and/or Acta Electronica Universitatis Tamperensis series. All other rights to the dissertation remain with the author. This means that the author may allow other publishers to publish an adapted, abridged or translated version of the dissertation.

The author is responsible for the dissertation's content and copyrights. The author must have the full copyright for the images, tables and other such material used in the dissertation, or he/she must have acquired permission to publish them both in print and online. The author must also ensure that all computer programme copyrights are in order.

The author of an article-based dissertation must ensure that he/she has permission to publish the articles both in the print version and the online version of the dissertation. The best and quickest way to request permission is to use the form provided by the publisher, e.g. http://www.elsevier.com/locate/permissions. If the publisher does not provide a form, permission may be requested by e-mail or fax. In such cases, the application is free-form (see a model letter at http://www.uta.fi/kirjasto/en/tup/instructions_acta/lupakirjeengl.pdf).

The author must have the publisher's permission even for unpublished articles. If the author cannot acquire permission, the article is only printed as a separate handout and not as a part of the dissertation or the online version. Copies of permissions to print must be submitted to the University Library.

Printing House

The printing house for the Acta Universitatis Tamperensis series is Tampere University Press Oy Juvenes Print.

Submitting the Manuscript to the Library

The author must submit his/her dissertation manuscript electronically to the Library as a PDF attachment by e-mail or on a CD at least five weeks prior to the public defence. Articles are also submitted as PDF files (each article as a separate file) or as high-quality printouts. The manuscript must have the Board's or the Dean's permission to publish (or the permission must be coming very soon). When it is submitted, the manuscript must have all the content and be technically ready, i.e. the layout and language must be polished. The file must also include all images and tables.

Adobe Acrobat is installed on all library computers, and it can be used to convert a Word file to a PDF file. The conversion can also be made using the PDF-XChange 3 programme, which is installed in all the computers in the computer labs.

Model

The dissertation must follow the instructions of the author's school, supervisor and preliminary examiners, and the conventions of the field. The Acta series provides a model for dissertation structure. This model can be used when no other instructions apply.

Layout

The size of the Acta series is B5. The cover, title page, the back of the cover page (page two) and the enclosed separate sheet are similar in all the books in the series: they are laid out by the Library and sent to the author for proofreading. Only the main heading is printed on the cover. If the dissertation has a subheading, it goes on the title page and the separate sheet. The author's text starts on page three (which is a right-hand page). Page three usually has a dedication or the table of contents, and no page number. These pages must, however, be included in the total page count or the final number of pages will be incorrect. The Library issues the book and online version a serial number and an ISBN number.

The manuscript is usually written in an A4 format, and scaled to B5 by the printing house. Even the Acta model is in an A4 format. It has tailored margins, styles and font sizes. The model is also paginated and includes a table of contents.

If the author does not use the Acta model, the font size could, for example, be 12 (Times New Roman), which can be read even in the B5 format. Page numbers should be located at the bottom of the page, in the middle. Margins do not matter in the online version, and the printing house positions them for the print version. In an article-based dissertation, articles are separated by a numbered grey square which the printing house adds on the outer edge of the page.

The author must submit the following information to the Library either on the application form or later, as soon as the information is available:

– Details of the public defence, printed on a separate sheet
– Names of possible partners
– Names of the supervisor and preliminary examiners

The Library will deliver the manuscript to the printing house and post it online. The printing house then sends the author the proofs. The manuscript is not printed until the author has accepted the proofs. Please note that the printing house charges a fee if the author wishes to make corrections after the manuscript was submitted and they have to send new proofs.

If the dissertation is written in Finnish, it must include an abstract in English.

Sales

Bookshop TAJU sells dissertations published in the Acta series, orders reprints if necessary and delivers dissertations to other bookshops if there is a demand for them. TAJU is located in Linna on the Main Campus (Kalevantie 5).
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