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Lappeenranta University of Technology

SCHOOL OF BUSINESS POSTGRADUATE STUDY GUIDE 2011-2012

School of Business
15 June 2011

Postgraduate study guide of the School of Business

This study guide is based on the Lappeenranta University of Technology *regulations on education and the completion of studies* (adopted by the university board on 16 June 2010).

The Graduate School of Lappeenranta University of Technology comprehends all of the doctoral programmes of the university, one of which is the doctoral programme of the School of Business, into which students are admitted.

Students of the School of Business may complete the postgraduate degrees of Licentiate or Doctor of Science (Economics and Business Administration), or Doctor of Philosophy. The research field for the degree of Doctor of Philosophy may be a field in which the university has a professorship. If a student wishes to complete the degree of Doctor of Philosophy, there shall be a well-founded connection between the research field of the dissertation and that of the professor or docent supervising the dissertation. The supervisor shall explain this connection as the student applies for the right to complete postgraduate studies.

1. Eligibility for postgraduate studies

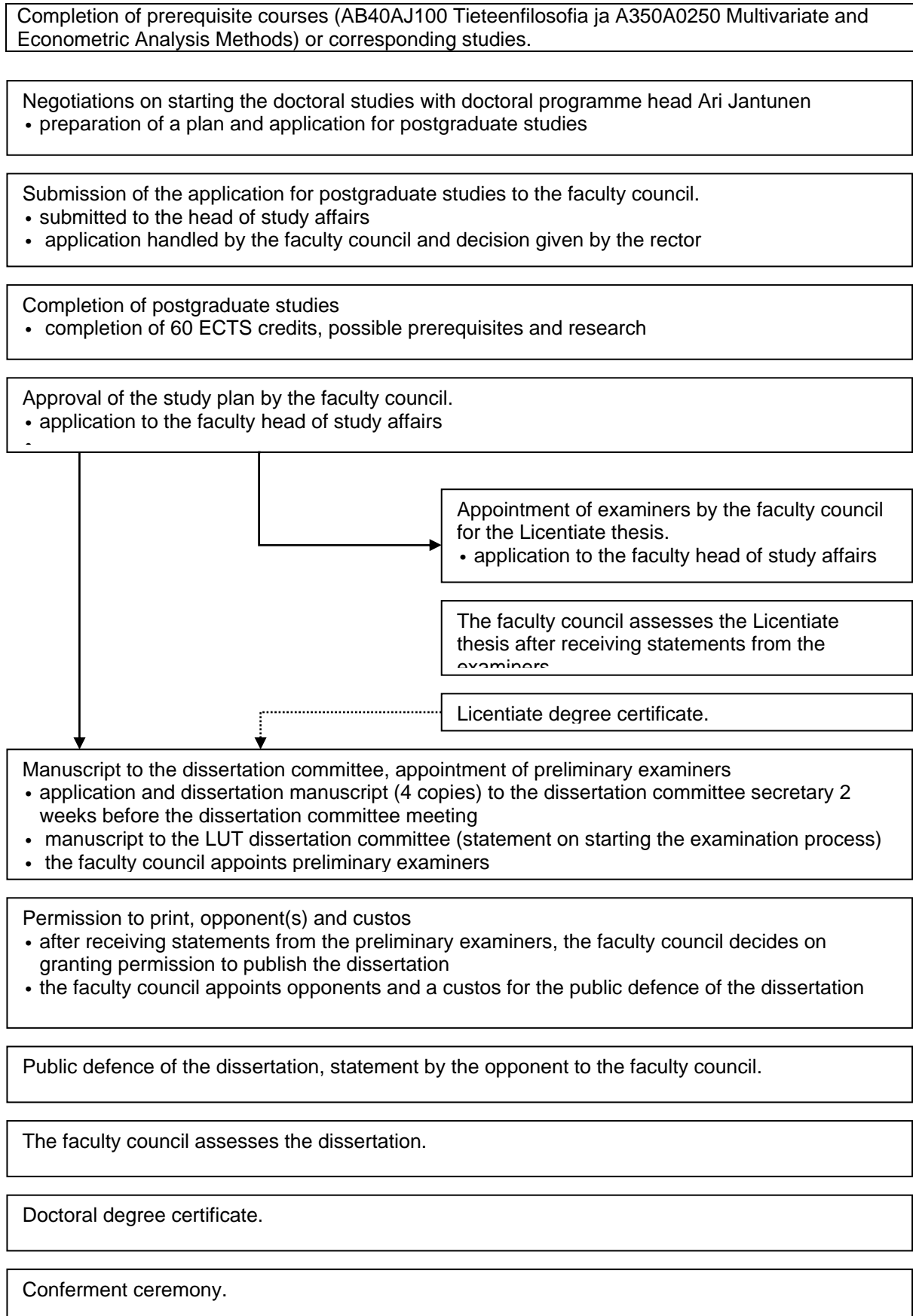
Applicants are eligible for postgraduate studies leading to the degrees of Licentiate or Doctor of Science (Economics and Business Administration) if they have a higher university degree in technology, business, or another field of science, or a degree of an equivalent level, which the faculty council deems as a sufficient basis for scientific postgraduate education. Students are required to have completed **in their higher university degree major studies in a field corresponding to the research field (major subject) of their postgraduate degree**, or to have otherwise acquired equivalent knowledge. If the undergraduate degree did not include such studies, the faculty council will set certain prerequisites based on a proposal by the supervisor of the postgraduate studies.

The above also applies to students who have previously completed a doctoral or licentiate degree in another field. In addition, the student shall complete a sufficient amount of major studies for the postgraduate degree.

Students who have completed a licentiate degree in the same field of research shall only prepare a dissertation to obtain a doctoral degree.

A M.Sc. degree completed abroad must correspond to the Finnish lower and higher university degrees in business administration (in total 300 ECTS credits) in order to be accepted as a basis for postgraduate studies at the School of Business.

2. Progress of Postgraduate Studies



3. Admission into the doctoral programme of the School of Business

The primary mission of the doctoral programme of the School of Business is to equip the postgraduate student for research work. In addition, the education provides tools for other demanding expert tasks. The aim is to admit skilled, motivated students who have the aptitude for a career in research and other demanding expert tasks and who are committed to their postgraduate studies and research. Students admitted to the programme are required to have sufficient research skills.

3.1. Admission criteria

The admission criteria for the doctoral programme include the completion of courses *AB40AJ100 Tieteenfilosofia (7 ECTS cr)* and *A350A0250 Multivariate and Econometric Analysis Methods (6 ECTS cr)* or equivalent studies, and a research and postgraduate study plan prepared by the applicant. The teachers responsible for the courses above shall assess the equivalence of other courses. Applicants may also demonstrate the required knowledge by passing an examination on the Tieteenfilosofia course literature and by writing a seminar report for the course Multivariate and Econometric Analysis Methods. Instructions on writing the report are available in the Noppa portal on the course web page or from the head of student affairs or the open university staff. These courses are included in methodology and scientific theory studies in the postgraduate degree. The courses or equivalent studies must be completed before submitting the application for postgraduate studies. Applicants without a valid right to study at LUT apply through the open university: www.lut.fi/avoinyliopisto.

The availability of teacher and supervisor resources has an impact on admissions. Admission is possible if the doctoral student can be assigned at least one primary supervisor and one additional supervisor.

3.2. Application

The doctoral programme of the School of Business welcomes applications twice a year. In the autumn semester, the application period ends on Monday, 31 October 2011 (applications handled in a faculty council meeting in December) and in the spring semester on Wednesday, 2 May 2012 (applications handled in a faculty council meeting in June). Also doctoral students in the faculty mainly apply for a postgraduate study right according to the deadlines above.

Before applying for postgraduate studies, the prerequisite courses must be completed. After completing the courses, the applicant contacts the head of the doctoral programme of the School of Business, Professor Ari Jantunen. With him, the applicant initially discusses the research field and plan of the postgraduate studies. Based on the discussions, the head of the doctoral programme explores the teaching and supervisor resources available, and if the conditions are fulfilled, proposes the appointment of a professor as the primary supervisor of the postgraduate studies. If the professor is in favour of the student starting his/her postgraduate studies and also another supervisor has been appointed, the **postgraduate study application** may be submitted to the faculty head of study affairs. N.B. The application must be approved by both supervisors. The contact information and office hours of the professors are available on the web site of the School of Business: www.lut.fi/fi/business/contact/staff/.

The application for postgraduate studies includes the following appendices: *a copy of the degree certificate and transcript, a research plan in English, a postgraduate study plan and a certificate of the completed prerequisite courses.*

The *research plan* (10-20 pages) includes e.g. the following:

- the background and theory of the research
- a concise overview of the scientific discourse relevant to the research area
- the research problem and the objectives, motivation, viewpoint and delimitations of the research
- the research strategy and a description of the empirical material used in the research

The initial postgraduate study plan includes:

1. a plan of the postgraduate studies, including the following:
 - topic areas (studies in the research field and methodology and scientific theory studies)
 - mode of study (if known)
 - number of ECTS credits for each topic area
 - anticipated time of completion
2. a publication plan
 - intended publication dates
 - possible topic areas of the articles
3. an internationalisation plan
 - possible exchange destinations
 - initial period of exchange
 - international conferences
4. a financing plan for the postgraduate studies (N.B. the funding plan of doctoral students includes the composition of the supervisory group)
5. a research schedule (four-year plan)

The research and postgraduate study plans are to be approved by the supervisor of the postgraduate studies. The final degree requirements are approved by the faculty council before the examination process of the dissertation is set in motion. Before the faculty council handles the matter, the final degree requirements are approved by the supervisor of the postgraduate studies and the head of the doctoral programme, who decides on the suitability and extent of study attainments not measured in credits (e.g. conference papers, essays, presentations).

The web site of the School of Business at www.lut.fi/fi/business/studies/postgraduate/ provides access to information on postgraduate studies and to the forms that need to be filled out (application for postgraduate studies, form for degree requirements, result form).

3.3. Admission process

The head of the doctoral programme of the School of Business, Professor Ari Jantunen, evaluates the applications and research and postgraduate study plans. Subsequently, the faculty head of study affairs makes preparations for the handling of the applications in the faculty council. If the faculty council is in favour of the postgraduate application, it also approves the possible prerequisites and officially appoints supervisors for the postgraduate studies.

The rector approves the admission of the applicant after receiving a statement from the faculty council. When the applicant is accepted, he or she will receive a letter of admission with an enrolment form for the following academic year and information on postgraduate studies. No right to postgraduate studies is granted if the applicant does not meet the admission criteria. The application may be rejected due to insufficient teaching and financial resources or the absence of suitable supervisors for the applicant's research field.

4. Supervision of postgraduate studies

The **supervisor of postgraduate studies** may be a tenured professor at LUT, an LUT docent, or an acting professor at LUT who holds a doctorate. In the School of Business, the head of the doctoral programme proposes the appointment of a professor as the primary supervisor of the postgraduate studies. To secure the continuance of the supervision, a secondary supervisor is always appointed. The decision to change supervisors is made by the faculty council. The postgraduate student submits an application to change supervisors to the head of study affairs in the faculty. The supervisor of the postgraduate studies is responsible for the overall degree requirements. The postgraduate studies of doctoral students employed by the university are overseen by a supervisory group, which has annual performance and development discussions with the doctoral students regarding the progress of their postgraduate studies. In addition to the professor responsible, the supervisory group includes at least one other professor (the secondary supervisor of the studies) and preferably also a senior lecturer or research scientist. It is the professor's responsibility to assemble the supervisory group, and its composition is announced in the financing plan attached to the postgraduate study application.

The supervisory group holds annual performance and development discussions with the doctoral students, and is obligated to give the students feedback on the progress of their postgraduate studies and support their dissertation process. Doctoral students will be provided support in publishing papers in international refereed scientific journals. The supervising professor and supervisory group are responsible for finding suitable publication forums and the best possible authors for co-written articles.

The aim is also to get the doctoral students involved in research groups with professors, post-doctoral researchers, and postgraduate and undergraduate students alike. The professor responsible for the postgraduate studies and the doctoral student agree on the duties and commitments regarding the studies, leaning on ethical guidelines. (Attached are the ethical guidelines for research at Lappeenranta University of Technology. They are based on "Good scientific practice and procedures for handling misconduct and fraud in science", prepared by the National Advisory Board on Research Ethics together with the Finnish scientific community <http://www.tenk.fi/HTK/index.htm>.)

5. Postgraduate degree requirements

The postgraduate studies are composed of courses organised by a graduate school or equivalent, university courses, literature exams or other scientific courses. The scientific postgraduate studies in the School of Business are composed as follows:

Studies in one's research field (major subject)	35-40 cr	ECTS
Methodology and scientific theory (incl. the courses AB40AJ100 Philosophy of Science 7 ECTS cr and A350A0250 Multivariate and Econometric Analysis Methods 6 ECTS cr) <i>(If the course has been completed in the student's undergraduate degree, it does not need to be completed in the postgraduate degree and cannot be included in the postgraduate degree requirements.)</i>	10-15 cr	ECTS
Other scientific postgraduate studies	10 ECTS cr	
Total		60 ECTS cr

The degree of Licentiate of Science (Economics and Business Administration) includes a licentiate thesis, and the doctoral degree in the field includes a dissertation.

The postgraduate degree requirements in the School of Business are to be prepared as follows:

- The studies must be postgraduate-level, for instance graduate school courses or university courses targeted for postgraduate students. Especially KATAJA and EIASM courses are recommended for inclusion in the postgraduate degree requirements. E.g. good qualitative research method courses are available through KATAJA.
- No more than 15 ECTS credits of **advanced studies** may be included in methodology and scientific theory studies or other scientific postgraduate studies. Advanced studies may be included in the student's research field (major studies) if the faculty council has determined in the curriculum that the courses in question are postgraduate-level. The suitability for postgraduate studies is mentioned in the course descriptions in the undergraduate study guide.
- The degree requirements of the postgraduate studies may include university-level courses previously completed by the student only if they have not been included in his or her lower or higher university degree.
- The level and suitability of courses arranged by other instances are evaluated by the supervisor of the postgraduate studies. The final degree requirements must state the **mode of study**, the name of the **instructor** of the course (=examiner), and the number of **ECTS credits** for the courses.
- For literature examinations, the degree requirements must list the name of the examiner, the number of credits, and the author, title and publication year of the work.
- The scope of the postgraduate study attainments is given in ECTS credits. If the number of credits has not been defined, the scope will be measured on the basis of the amount of work by the student, i.e. 26 h = 1 ECTS credit, 40 h = 1 credit unit. ECTS credits are always given in whole numbers.

- A licentiate thesis or dissertation may not be confidential.

5.1. Research field of postgraduate studies

Education leading to a postgraduate degree is planned and organised for specific research fields. The research field is the topic area (major subject) of the studies, which is specified in the postgraduate study application. The majority of the postgraduate studies and the dissertation deal with the student's research field. The supervisor for the postgraduate studies is assigned on the basis of the research field. The postgraduate research fields of the School of Business are listed below, but the head of the doctoral programme may also make exceptions depending on the case.

- 9673 Supply Management
- 9661 Management and Organizations
- 9672 International Marketing
- 9651 Accounting
- 9652 Finance
- 9665 Entrepreneurship and Management of SMEs
- 9671 Strategy Research
- 9662 Knowledge Management
- 9681 Business Law

5.2. Completion of postgraduate studies

The target time for doctoral studies is 3.5 years, and the licentiate degree corresponds to two academic years of full-time studies. The faculty normally finances the studies of its doctoral students for four years if the minimum requirements for the first year are met. Doctoral students also apply independently for grants to support their doctoral studies. Doctoral students are responsible for their own research work and reporting on it, and for successfully completing their postgraduate studies in accordance with the targets set by the faculty. It is not advisable for doctoral students to work part-time or teach outside the faculty.

During the first year, doctoral students are expected to complete at least the following:

- | | |
|---|---------------|
| • AB40AJ100 Philosophy of Science | 7 ECTS cr |
| • A350A0250 Multivariate and Econometric Analysis Methods (<i>if not completed in the undergraduate degree</i>) | 6 ECTS cr |
| • AA10AJ100 Johdatus kauppateiden jatko-opintoihin (introduction to postgraduate studies in business) | 7 ECTS cr |
| • One postgraduate course from one's own research field | 5-7 ECTS cr |
| Total | 25-27 ECTS cr |

In addition to the postgraduate courses, doctoral students present a **detailed research plan** in the first-year Postgraduate Research Seminar in Business Studies. Doctoral students who have completed the above-mentioned postgraduate studies during their first year are granted funding for an additional three years to complete their degree. Also during the three following years, the progress of the postgraduate studies is followed closely. Doctoral students are obligated to give updates on the progress of their work to their supervising professor and supervisory group at least once a month. Feedback on the supervision of postgraduate studies is collected from doctoral students with the

Webropol system once a year. A compilation of the feedback is forwarded to the dean. The feedback is discussed in a meeting between the dean and the doctoral students. For postgraduate students not employed by the university, this timetable for postgraduate studies is only a recommendation.

5.3. Postgraduate degree programmes

LUT is part of the Finnish Doctoral Program in Business Studies (KATAJA) coordinated by the Helsinki School of Economics. KATAJA organises a number of postgraduate courses annually in different research areas. Their inclusion in the postgraduate studies is recommended especially. The inclusion of the courses is first discussed with the supervisor of the postgraduate studies. Information on the courses is provided by the faculty professors and on the KATAJA web site. The School of Business also takes part in the graduate schools operating under KATAJA. For KATAJA courses and graduate schools, see web site www.hkkk.fi/katajaw

Internationality is an essential part of postgraduate studies. Research is always assumed to be international. International graduate schools offer excellent possibilities for creating contacts with international researchers. The faculty's doctoral students are encouraged to take part in international researcher exchange in universities of repute. All postgraduate students should also include courses of the EIASM (European Institute for Advanced Studies in Management) in their postgraduate studies. Further information at www.eiasm.be/.

6. Grading of postgraduate studies and degree certificate

- All postgraduate courses are graded *approved with distinction*, *approved* or *failed*.
- A scale of 1-5 may be applied only to the assessment of courses that are part of the undergraduate curriculum.
- If needed, the supervisor of the postgraduate studies converts postgraduate studies completed in another institution to the scale applied at Lappeenranta University of Technology.
- All courses entered into students' records shall be graded.
- Studies in the student's field of research (major subject) may be given the grade *approved with distinction* when more than half of the studies, weighted with the number of ECTS credits for each course, have been given the grade *approved with distinction*. If an individual course has been graded on the scale 1-5, grades 4 and 5 correspond to *approved with distinction* and grades 1-3 correspond to *approved*.
- The supervisor of the postgraduate studies has the final say in the overall grade for the major subject.

The postgraduate degree certificate includes

- the degree and field
- the name and grade of the research field (major subject) (*approved* or *approved with distinction*)
- the grade of studies in methodology and scientific theory (*approved* or *approved with distinction*)
- the grades of other scientific postgraduate studies (*approved* or *approved with distinction*)

- the title and grade of the dissertation (*approved* or *approved with distinction*)
- information on the public defence of the dissertation, the opponent and custos.

7. Postgraduate study services

7.1. School of Business

Applications for postgraduate studies and final degree requirements are submitted to the head of study affairs at the faculty. Students may also turn to the head of study affairs in issues related to postgraduate studies, especially applying to study, and practical matters involving the faculty council and postgraduate courses (e.g. schedules, examinations). Contact:

- Faculty Head of Study Affairs Minna Ranta
Office 7386 (7th building)
tel. (05) 621 7226
minna.u.ranta@lut.fi

7.2. Research and Innovation Services

The study affairs secretary in Research and Innovation Services is responsible for the postgraduate student register, certificates of attendance, practical matters concerning the dissertation process and the dissertation itself, and degree certificates. Contact:

- Study Secretary Eeva Häyrinen (secretary of the dissertation committee)
Research and Innovation Services
tel. (05) 621 6057
eeva.hayrinen@lut.fi

7.3. LUT guidelines

LUT guidelines on postgraduate studies are available on the university web site at www.lut.fi/fi/lut/studies/postgraduate/.

8. Guidelines on the dissertation process and the examination of dissertations

Before the faculty council, the dissertation manuscript is handled by the dissertation committee. The examination process can be set in motion after the committee is in favour of it. Next, the supervisor of the studies proposes the appointment of preliminary examiners to the faculty council. The supervisor of the dissertation or a person otherwise involved in the research may not be a preliminary examiner. Based on the preliminary examiners' statements, the faculty council decides on granting permission to print and appoints one or two examiners for the dissertation based on the supervisor's proposal. The supervisor of the postgraduate studies is the custos of the public examination. Based on the statement of the opponent/opponents, the faculty council decides on the approval and grade of the dissertation.

Issues related to dissertations are handled by the faculty council of the School of Business (e.g. appointment of preliminary examiners, approval and grade of the dissertation). The faculty council also appoints the examiners for and evaluates Licentiate theses. Instructions regarding the dissertation process are available at www.lut.fi/fi/lut/studies/postgraduate/instructions/.

9. Postgraduate courses offered by the School of Business

AA10AJ100	Introduction to Postgraduate Business Studies	7 ECTS cr
AB20AJ100	Postgraduate Research Seminar in Business Studies (Kati-Forum)	3 ECTS cr
AB40AJ100	Philosophy of Science	7 ECTS cr
AB40AJ200	Postgraduate Course in Statistical Methods	5 ECTS cr
A350A0250	Multivariate and Econometric Analysis Methods	6 ECTS cr
LUTJ0000	Science, Research and the Researcher	5 ECTS cr

Important! A more detailed schedule and a list of other possible postgraduate courses organised during the academic year will be posted on the faculty web site www.lut.fi/fi/business/studies/postgraduate/.

AA10AJ100	INTRODUCTION TO POSTGRADUATE BUSINESS STUDIES 7 op
	Compulsory orientation course for all postgraduate students (studies in one's research field), recommended to be completed in the first year of postgraduate studies. The course will be organised if a minimum of five students enrol for it. Binding enrolment to the faculty head of study affairs by the end of September. The course will be lectured in English, if needed.
Ajankohta	Period 2
Opettaja(t)	Professor, D.Sc. (Econ. & Bus. Admin.) Ari Jantunen and faculty professors supervising postgraduate studies
Aims	The aim is to support postgraduate students majoring in the faculty in the start and progress of their dissertation process and in establishing a research community. The aim of the course is to acquaint students with the research traditions and current research trends in their own field.
Contents	Preparation of a research plan including the key concepts, theories and methods of the dissertation. Students write a research plan, and working papers on the key concepts of their dissertation and key theories in their research area in relation to their dissertation. In addition, students analyse dissertations and other scientific publications and attend a public examination of a dissertation. The professor responsible and visiting experts give presentations on scientific writing, publication, etc.
Course Work	Successful completion requires assignments approved and active participation in seminar sessions. Detailed instructions and schedules given in the course sessions.
Course Material	Books, articles, scientific publications and dissertations as agreed.

AB20AJ100	POSTGRADUATE RESEARCH SEMINAR IN BUSINESS STUDIES 3 ECTS cr
When Instructor(s) Aims Contents Course Work	<p>The course is elective for postgraduate students and is included in other scientific postgraduate studies. However, doctoral students present a detailed research plan in this course during their first year of studies. The course will be organised if a minimum of five students enrol for it. Binding enrolment to the faculty head of study affairs by the end of March. The course will be lectured in English, if needed.</p> <p>Seminar session in Period 4. Professor, D.Sc. (Econ. & Bus.Admin.) Ari Jantunen</p> <p>By the end of the course, students are expected to master the different stages of research work.</p> <p>The course consists of presentations by postgraduate students and researchers at the faculty and of independent work.</p> <p>Successful completion requires independent work and active participation, including 1) preparing or updating the written research plan for one's dissertation 2) presenting one's research plan in the seminar 3) following the research plan presentations of other postgraduate students, and 4) a written evaluation of the research plan of another postgraduate student. Detailed instructions will be sent to students who enrol for the course in spring 2012.</p>
AB40AJ100	PHILOSOPHY OF SCIENCE 7 op
Ajankohta Opettaja(t) Aims Contents	<p>Compulsory course in methodology and scientific theory studies for all postgraduate students, and a compulsory prerequisite for doctoral studies in business.</p> <p>The contact lessons will be organised if a minimum of ten students enrol. Applicants without a valid right to study at LUT apply through the open university by 13 April 2012. Students with a study right at LUT enrol directly to the instructor responsible by 13 April 2012. Students enrolled will be sent an advance assignment, which must be completed in order to be able to take the course. The instructor responsible selects the students for the course. The requirements for passing the contact lessons are explained when the lessons begin. The course is lectured in Finnish. Students who do not speak Finnish may complete the course by taking an exam on literature in English.</p> <p>Instruction starts in May 2012. Senior Researcher, Ph.D. Jorma Sappinen</p> <p>This course provides students basic knowledge of the philosophy of science in order to equip students for comparing and assessing scientific theories and research methods, and for understanding theoretical and methodological discourse involving business administration. The written assignments for the course give students extensive knowledge of the philosophy of science and allow them to use this knowledge in the evaluation and development of the motivation and argumentation of their own research.</p> <p>Argumentation, theory of knowledge, induction and deduction, main schools of the science of philosophy, scientific explanation and the ethics</p>

<p>Course Work</p>	<p>of science. 16 h of lectures, 16 h of seminar work and independent work. The course is completed either a) by attending Finnish-language classes and completing the assignments/essays or b) by passing an examination on the course literature. In the academic year 2011-2012, examinations will be arranged on 10 Oct. 2011, 30 Jan. 2012 and 2 Apr. 2012 at 16.15. <i>Students register for the examination at least one week in advance.</i> Detailed instructions will be sent to students who enrol for the course in spring 2012.</p>
<p>Course Material</p>	<p>Literature examination: (1) Godfrey-Smith, Peter: Theory and Reality; An introduction to philosophy of science, excluding chapter 14. (2) Locke, Lawrence F. et al.: Reading and Understanding Research, 3rd ed. (3) Bryman, Alan & Bell, Emma: Business Research Methods, 2nd ed, chapters 1, 5 and 24 (4) Academy of Management (AoM), Code of Ethics: http://www.aomonline.org (5) National advisory board on ethics, Good scientific practice and procedures for handling misconduct and fraud in science: http://www.tenk.fi</p>

<p>AB40AJ200</p>	<p>POSTGRADUATE COURSE IN STATISTICAL METHODS 5 op</p>
<p>Ajankohta Opettaja(t)</p>	<p>Optional course in methodology and scientific theory for all postgraduate students. The course will be organised if a minimum of five students enrol for it. Binding enrolment to the faculty head of study affairs by 13 April 2012. A more detailed schedule is sent to those who enrol for the course. The course will be lectured in English, if needed.</p> <p>May 2012 Professor, D.Sc. (Tech.) Kaisu Puumalainen Professor, D.Sc. (Tech.) Sanna-Katriina Asikainen</p>
<p>Aims</p>	<p>By the end of the course, students are expected to master different multivariate methods in business administration. The course involves a number of analysis assignments in which students apply the methods they have learned to their own material. The SAS and LISREL software programmes are used in the analyses.</p>
<p>Contents</p>	<p>Regression models (linear, hierarchical, mediators, moderators, etc.) variance analysis, confirmatory factor analysis, structural equation models. The contents may vary annually.</p>
<p>Course Material</p>	<p>Hair, Anderson, Tatham & Black. Multivariate data analysis. Prentice Hall, New Jersey. 1997 or a more recent edition. Diamantopoulos & Sigauw. Introducing LISREL. A Guide for the Uninitiated. Sage Publications, London. 2000. In addition articles assigned by the lecturer.</p>

A350A0250	MULTIVARIATE AND ECONOMETRIC ANALYSIS 6 ECTS METHODS
	<p>Compulsory course in methodology and scientific theory for all postgraduate students and a compulsory admission course for applicants. Course can be completed by writing the seminar report. Attendance at lectures is not compulsory. Students who are not enrolled at LUT apply to the course through the open university office. The course will be lectured in English.</p>
Period	Period 3-4
Teacher(s)	Professor, D.Sc. (Tech.) Kaisu Puumalainen, Associate Professor, D.Sc. (Econ. & Bus. Admin.) Heli Arminen
Aims	<p>The aim of the course is to give extensive general knowledge about the main econometric and multivariate analysis methods. After the completion of the course, students:</p> <ul style="list-style-type: none"> - understand the role of multivariate analysis in scientific research - can evaluate and compare the applicability of various multivariate methods - are able to estimate and collect numerical data about the market environment in different countries - can apply multivariate analysis methods for cross-sectional, panel and time series data - can conduct the analyses with SAS software - can interpret and evaluate the results of the analyses - can report the results according to good scientific practice
Content	<p>Core content: measure development and factor analysis, cluster analysis, linear regression, linear models, logistic regression, autocorrelation, stationarity, panel data regression</p> <p>Additional content: use of SAS software, use of international databases of statistical data.</p>
Modes of study	Lectures 21 h, exercises 21 h, independent data collection and analysis using the SAS software 55 h, 3 rd period. Seminar 8 h, independent analysis, writing of report and preparing for presentation 55 h, 4 th period. Total workload for student 160 h. Written seminar report and presentation.
Evaluation	Final grade 0-5. Evaluation 0-100 points. Written seminar report 75%, presentation 25%.
Study materials	Hair, Joseph Jr. et al.: Multivariate data analysis. Prentice Hall, 1998. Hill, R. Carter – Griffiths, William E. – Judge, George G.: Undergraduate Econometrics, 2nd edition. 2001.
Prerequisites	Basic courses in statistics and economics.

LUTJ0000	SCIENCE, RESEARCH AND THE RESEARCHER	5 ECTS credits
	<p>An optional course to be included in postgraduate business studies (other scientific postgraduate studies). However, the course is highly recommended to all postgraduate students in business. The course will be lectured in English.</p> <p>Registration for the course through WebOodi, max. 35 students.</p>	
Period	Period 1	
Teacher(s)	Professor Kalle Michelsen	
Aims	The course aims to give doctoral students a profound understanding of science as a social and cultural phenomenon. In addition, we study the structures and objectives of scientific knowledge. What scientific and technological research is, and how societies utilise scientific knowledge.	

Contents	The goal of the course is to strengthen the professional identity of doctoral students and give a clear picture of why dissertations are prepared and of the role of dissertations and doctoral students in the scientific community.
Modes of Study	The course consists of three parts, the first of which deals with the nature and construction of science and scientific knowledge and science as a social system. The second part examines the practices of conducting research, the creation and change mechanisms of scientific and technological knowledge, and research ethics. The third part examines the position of science and technology in society, different modes of research, and national and international science and technology policies.
Modes of Study	Lectures 18 h Successful completion requires attendance in lectures, discussions based on lecture literature, and two completed assignments: an interim report, which is a scientific argumentation on a topic chosen by the student, and a final report, which is a scientific critique examining topical questions related to science and research policies.
Study materials	Course literature available in electronic form and announced in connection with the course schedule on the faculty web site.
