

Final

Final report of the Transferable skills group

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Preface

According to the decision of the University of Oulu Board of Directors (19.11.2010), a multi-disciplinary, cross-sectoral graduate school (the University of Oulu Graduate School – UniOGS) will start its activities on August 1, 2011. As part of the preparations for this, the Research Council of the University of Oulu, in its meeting on December 16, 2010, appointed a working group for drafting the principles of transferable skills training within the University of Oulu Graduate School. The members of the working group were Dr. Leila Risteli (Research and Innovation Services, chair), professors Timo Jämsä (Faculty of Medicine), Esa Läärä (Faculty of Science), and Jaana Tähtinen (Oulu Business School), Dr. Hanna Järvenoja (Faculty of Education), Dr. Kari Väyrynen (Faculty of Humanities), Dr. Anthony Heape (Biocenter Oulu), Dr. Riitta Kamula (Thule Institute), Dr. Tapio Repo (Infotech Oulu), Dr. Riitta Sallinen (Language Centre), Mr. Matti Nuortio (PhD student, Faculty of Science), Ms. Mailis Aaltonen (Human Resources), Mr. Sakari Jussi-Pekka (Career Services), Mr. Jani Sassali (Library), and Dr. Pekka Belt (Faculty of Technology, secretary). The working group reported to the Research Council and to the main working group for practical planning of the University of Oulu Graduate School. The deadline of the group's work was March 31, 2011.

The tasks of the working group were to describe the present offerings of transferable skills courses at the university, to identify the most important gaps, and to propose how this training can be organised and funded so that the offerings are harmonised and easily accessible for the graduate students. The organisation of transferable skills training was to mainly rely on the resources that are already allocated to this purpose, but, in special cases, funding of new entities could also be argued for. The working group also had to take into account the transferable skills training needs of International Master's Programmes at the University of Oulu.

The working group has had four meetings. In its second meeting, it heard professors Peter Hästö and Lloyd Ruddock about International Master's Programmes.

1 Introduction

1.1 What are transferable skills

Multidisciplinary research is rapidly becoming more common, and scientists must acquire and continually develop a number of personal, professional and social skills. Strong foundations for the development of these skills must be laid down during the doctoral training period and further developed throughout one's career. Young scientists, guided by their supervisors, should seek to create their own, sufficiently diverse, personalised collection of skills and knowledge. Most of these tools are field-specific and they are acquired in the context of the training offered by well-structured doctoral programmes. Other skills can be classed as cross-disciplinary professional skills/knowledge (so-called "transferable skills"). These skills include, for example, research ethics; IPR; general communication skills; writing grant applications; evaluation skills; personal and project management; job applications & career development in academic and applied research and business. All these skills are essential for the development of successful career, both within and outside of academia, in tomorrow's highly competitive, professional environment.

Transferable skills are often taught, with varying levels of efficacy, as "side-products" of field-specific doctoral training programmes. In some programmes, they may even represent "major field-specific topics" of the training. The definition of what constitutes a "transferable skill" can thus vary from one discipline, or sector, to another.

1.2 Current course offering on transferable skills at the University of Oulu

Currently, a large, varied selection of transferable skills courses at the University of Oulu is provided by the different faculties, doctoral programmes, research groups, and administrative units of the University of Oulu. However, the frequency of the courses, the instruction language, and the principles for obtaining credits vary significantly from one course provider to another.

The transferable skills work group has familiarised itself in procedures in other countries. Especially good examples and appropriate examples come from the British universities (see Appendix 1). The group also collected the existing course offering at the University of Oulu, and categorised it. The courses are presented in Appendix 2.

2 Proposal on arrangement of transferable skills course offering at UniOGS

Doctoral training within a university graduate school aims to provide young scientists with the tools necessary to develop a successful career in high-level international research, or as expert advisors, either in academia, or in other sectors. Students graduating from doctoral programmes of the UniOGS should have gained an excellent capacity for critical and creative thinking, a strong motivation for discovery-driven research, and a sufficiently large repertoire of both field-specific and general skills and knowledge that will allow them to operate in research, education and administration in a global environment.

In view of their importance to career development, doctoral programmes operating within the UniOGS should clearly identify relevant transferable skills and general knowledge which their graduates must acquire for a successful career, and then ensure and control that their students have actually acquired them by the end of their training.

The transferable skills group proposes that UniOGS will utilise the existing course offerings as a starting point for providing transferable skills courses. This course offering will be further developed based on feedback and future needs. In addition, a number of basic courses, although taught as field-specific courses, could also be offered, with little effort, to wider audiences in the form of transferable skills courses.

The transferable skills group also proposes that in the future, UniOGS will maintain a versatile transferable skills and general education course offering in the following categories:

- Introduction to doctoral studies
- Scientific research skills
- Communications skills
- Personal efficiency and career development
- Managing research projects

In order to cater for the growing population of international students, the course offering will be available both in Finnish and in English.

2.1 Proposed transferable skills course offering

The transferable skills work group has collected and categorised the existing course offering (see Appendix 2). While analysing the availability of transferable skills courses, the work group also identified gaps in potentially beneficial areas in the course offering (see Appendix 3). Appendix 2 also includes a proposal for addressing the gaps in the course offering.

The group proposes that UniOGS takes the necessary measures to develop the course offering to fill the identified gaps. This type of support is necessary particularly when the new courses are developed.

In addition to the courses, lectures and courses provided by visiting lecturers should be accepted as transferable skills credits, when relevant.

2.2 Realisation principles of the courses on transferable skills

Despite the expected increase in the number of students enrolled in any given course, as well as the necessity to provide for both Finnish and foreign students, UniOGS intends to provide the transferable skills and general education course offering using existing resources, without allocating substantial extra funds. Finnish and English versions of some

courses with similar content can already be found in sufficient numbers to absorb the expected increase in participation. However, it may be necessary to increase the frequency of some numerically under-represented courses, or courses with limited capacity, to two editions a year, of which one could be in Finnish and the other in English. Furthermore, other courses are currently available in only one language (usually Finnish). In this case, it is desirable that the same course, or a similar course, will also be available in English.

The home units of the lecturers must acknowledge that providing courses for UniOGS transferable skills are a part of the contracted working time allocation. However, in the UniOGS building phase, extra allocation may be needed.

2.3 Budget and management of the course offering

The identified gaps in the course offering (Appendix 3) should be filled through the development of new courses. This will require the allocation of new funds from the UniOGS budget. Likewise, expenses related to providing additional editions of existing courses, due to increased attendance predictions and language issues, should be covered by UniOGS. Finally, it is expected that UniOGS covers all costs related to the renting of lecture halls for the teaching of transferable skills and general education courses. It is estimated that the total additional costs incurred by the development of the UniOGS transferable skills and general education curriculum will amount to approximately 50 000 € annually during the first years of operation. In the longer term, it can be assumed that the operations become more efficient, allowing some of these resources to be re-allocated.

The Dean and the Coordinators of the three Doctoral Training Committees of UniOGS will be responsible for managing and developing the transferable skills course offering. In this respect, the functional cooperation between all services and teaching bodies of the University, particularly those predicted in the plans for the cross-sectoral structure of UniOGS, are essential.

The Dean and the three coordinators will be responsible for creating, developing, and maintaining a Catalogue of the UniOGS course offering and a UniOGS web-site. Course descriptions provided by the lecturers should be made electronically available; for example on the Toolbox of Research (TOR) pages of the University of Oulu website.

2.4 Transferable skills studies for international master's programmes

The transferable skills work group proposes cooperation with International Master's Programmes. At present, the various International Masters' Programmes have no general transferable skills offering. Therefore, at this point it is not possible to define cooperation in detail.

3 Policy recommendations for the higher level group

Transferable skills group proposes the following points for the UniOGS higher level group to take a position on:

- Identical rules/requirements for the transferable skills studies are valid in the UniOGS, across the entire university, including equal credit values for courses.
- The transferable skills offering will be open to all doctoral students and, if space allows, to post docs and academic personnel. All transferable skills and general education provided by UniOGS should be available in both Finnish and English.
- All doctoral students must attend the UniOGS course on Research Ethics, or be able to demonstrate that they have recently followed a similar course in another higher education establishment in Finland.

- Doctoral programmes operating within the UniOGS should clearly identify relevant transferable skills and general knowledge which their graduates are expected to possess for a successful career, and then ensure and control that their students have actually acquired them by the end of their training.
- Suitable courses should be chosen based on an identified need or desire to improve the skills and knowledge necessary for a successful career development. Supervisors and Doctoral Programmes may recommend that individual students and/or all students enrolled in their programme follow specific courses according to identified needs.
- Students may choose transferable skills courses as needed. Study credits acquired through attendance of transferable skills courses may be counted towards the doctoral degree up to a maximum of 20% of the total study credits required for the degree.
- Doctoral programmes operating within the UniOGS should clearly identify relevant transferable skills and general knowledge which their graduates are expected to possess for a successful career, and then ensure and control that their students have actually acquired them by the end of their training.
- In order to minimise the personnel resources required for marking exams and assignments, study credits should, whenever possible, be awarded based on attendance.
- An “Induction Package” course, will be arranged by UniOGS at the beginning of each academic semester. The aim is to provide new students with information about the structure and practices of UniOGS, as well as practical information regarding the services, formalities and general requirements essential to both their doctoral studies and every-day life, This information should also be made available on the UniOGS web pages (updated in “real-time”) and in the form of a hand-book (updated annually). No study credits will be awarded for attending this course.

- Modular structure of course offering will be adopted. Large transferable skills courses treating multiple topics currently packaged into a single course, will be made available also in the form of smaller modules, allowing the students to attend only those that are needed.
- Course management, including registration, control of attendance and study credit attribution, will be done via Oodi. Credit points will be given under defined course codes. Oodi must be adjusted to accept small modules, such as lectures from one to more hours. In other words, once a student takes a small module, it will be marked into Oodi.
- Course-specific feedback will be collected and analysed by UniOGS to continuously develop and improve the offering. Feedback from newly graduated doctors will be sought in order to identify strong and weak areas of the transferable skills platform.

It is in the interest of both the Finnish society and the International doctoral students that sufficient Finnish language courses are available to all International students. The transferable skills group considers that it is important for international students to have sufficient possibilities to take Finnish studies irrespective of whether transferable skills credits are given.

Appendix 1 – British example on transferable skills course offering

In the UK, the Research Councils (comparable to the Research Councils of the Academy of Finland) are fundamental in setting standards and identifying best practices in research training. Their Joint Skills Statement (2001) describes the skills that doctoral research students funded by the Research Councils are expected to develop during their research training. This statement defines targets in the following categories:

- research skills and techniques
- research environment
- research management
- personal effectiveness
- networking and team-work
- career management

These skills may be either present on commencement, explicitly taught, or developed during the course of the research. It is expected that different mechanisms are used to support learning as appropriate.

The development of transferable skills courses at British universities has been influenced by the review, undertaken in 2002 by Sir Gareth Roberts, into the supply of science and engineering skills in the UK. The review was commissioned as part of the Government's productivity and innovation strategy.

The report identified as a major problem that skills acquired by PhD graduates do not serve their long-term needs, i.e. they do not prepare people adequately for careers in business or academia. Insufficient access to training in interpersonal and communication skills, management and commercial awareness were identified as particularly pertinent problems.

In the following, the transferable skills training of Imperial College, London (<http://www3.imperial.ac.uk/>), is described. The university has two graduate schools with training schemes for transferable skills; the establishment of the courses resulted from the Government's Roberts'

Report. The courses are designed to complement existing departmental training programmes and vary in length and format, from one-hour lectures to three-day interactive workshops. There are also online courses that can be completed, or used as an information resource. The programme is supported by the Research Councils.

The transferable skills programme includes two types of courses, defined as A and B list courses, respectively. The A list courses are considered to be the most essential to students in the first 12-15 months of their PhD and will give them key transferable skills to help with their research and beyond. The B list covers a range of topics such as career development and courses which are either of general interest, or of a specialised nature.

All Imperial College PhD students are required to select either four A list (core) courses, or one three-day residential Research Skills Development course plus one further course selected from either the A list, or the B (optional) list. , An on-line needs analysis questionnaire is provided to help the student in choosing appropriate courses.

Appendix 2 – Current transferable skills course offering at the University of Oulu

1 INTRODUCTION TO DOCTORAL STUDIES

Examples on best practices on arranging an introduction course for doctoral students exist within the university. It is important that each new student has a possibility to attend introduction and obtains understanding on the rights and obligations relevant for their studies. In addition to attending introduction, each student should receive a booklet describing the relevant issues. Students will not be provided credits for attending introduction.

It is important that the UniOGS dean has visibility especially during the beginning of doctoral studies. This is important especially in the beginning of UniOGS ramp up as there are needs for harmonising practices across the university.

The transferable skills group defined at least the following themes to be included:

- Doctoral studies as a project
- Practical matters (for Finnish and International students)
- Responsibilities of UniOGS, doctoral programmes, supervisor, and student

Examples on current similar offering:

- Orientoituminen jatko-opintoihin [KTK]
- Doctoral Studies at the University of Oulu [Infotech – how to get a PhD]

2 SCIENTIFIC RESEARCH

2.1 Ethics

Science is a human activity and as such an integral part of society. As all our activities, it aims to realise some values (some 'goods' as its goals) and it has many norms (rules of behaviour), that try to ensure the attainment of its goals. The ethics of science has two basic tasks: (a) it tries to guarantee the inner honesty, truthfulness and openness of the scientific enterprise (good scientific practice). This is crucial for the reliability of the science and also for the institutional legitimacy of the university in a society. (b) Secondly, science has outer responsibilities for the society as a whole. It contributes to the development of economic, social and cultural capital and to the development of human and environmental health. The state of affairs in the global science is far from good in these respects. Therefore, science education must make future scientists aware of the ethical problems of their activity.

- **Research ETHICS (1-2op)**
- **Tutkijakoulun etiikka-seminaari (2 op) [HuTK]**
- **Tieteen etiikka [HuTK]**
- **Research Ethics [Infotech – how to get a PhD]**
- **Gap - Käytännönläheinen paketti etiikasta: hyvä tieteellinen käytäntö**

2.2 Research general:

An essential part of advanced researcher education is a deeper knowledge of the limits, possibilities and presuppositions of scientific knowledge. Theory of science gives basic knowledge of these problems involved in every scientific enterprise. All scientific traditions have certain intellectual and metaphysical presuppositions. It is useful to acknowledge these and avoid a reductionistic position, which overestimates the possibilities of the own scientific paradigm. This is also a presupposition for innovative interdisciplinary co-operation.

- History of Research Methods [Infotech – how to get a PhD]
- Research Methods: Analytical Approach [Infotech – how to get a PhD]
- Research Methods: Systems Approach [Infotech – how to get a PhD]

- Quantitative Questionnaire Study [Infotech – how to get a PhD]
- Designing Qualitative Approach in Research [Infotech – how to get a PhD]
- Computer-based statistical processing of material [LTK]
- Basic statistical methods in medicine [LTK]
- Good Practices in Researcher Education [Infotech – how to get a PhD]
- GAP - Principles of scientific knowledge creation and critical argumentation 3 credit points [Väyrynen, Läära & Tähtinen]
- Tieteenfilosofia I ja II [HuTK]
- Yleinen tieteenfilosofia, 4 op [KTK]

2.3 Information skills

- Introduction to Oulu University Library Services 2h [Library]
- Information Skills for Postgraduate Students 1 op [Library]
 - Introduction to Information Retrieval in Research Process 3h [Library]
 - Discipline-specific Information Sources 3 h [Library]
 - Citation Management with RefWorks 2h [Library]
 - Publish or Perish – Evaluating Scientific Publications 3h [Library]
- Literature Reviews: Existing Knowledge from Data Bases [Infotech – how to get a PhD]

2.4 Finalising doctoral dissertation

- Towards the post-doctoral party karonkka [Thule]
- Tohtorijuna [Thule]
- Writing of a compilation when articles accepted, 3h lecture, in Finnish & English [Vade Mecum]

2.5 Combined full courses

- How to get a PhD

This is an example of a course out of which a student can either choose separate modules or attend the entire pre-defined course.

- Others to be defined?

3 COMMUNICATION SKILLS

3.1 WRITING SKILLS

- Julkisuus, julkaiseminen ja etiikka [HuTK]
- Tieteellinen kirjoittaminen [HuTK]
- Academic writing for graduate school [HuTK]
- Tieteellisen viestinnän perusteet FIN & ENG [Risteli LTK]
- Scientific writing – English for researchers [Language centre]
- English for medical conferences and scientific writing [LTK]

- Final Result: A Scientific Publication [Infotech – how to get a PhD]
- Academic Writing [Infotech – how to get a PhD]
- Writing scientific articles, 3h lecture, in Finnish & English [Vade Mecum]
- Peer Review Process: the Task of a Referee [Infotech – how to get a PhD]
- How to publish in top Information Systems and software Engineering journals [TOL Mikko Siponen]

- Writing of a doctoral dissertation, 3h lecture, Fin & Eng [Vade Mecum]
- Publishing Dissertation in the Acta Universitatis Ouluensis Series 3h [Library]
- Johdatus LaTeXiin 800 149 P, vastaa Markus Harju [LuTK Matematiikan laitos]

- GAP - Writing for general public [Erkki Karvonen HuTK???
- Gap – Evaluation day – article review, dissertation pre-examination, tasks of an opponent, evaluation of project proposals/grant applications, []

3.2 TEACHING AND PRESENTATION SKILLS

- Teaching and presentation skills [Language centre]
- Scientific Communication Skills: How to Tell (and Listen to) a Story [Tony Heape, BCO, for Infotech – how to get a PhD]

- Basics of Scientific Communication [LTK]
- What on Earth is Learning About? Perspectives into Learning and Research on Learning [Infotech – how to get a PhD]
- English for Medical Conferences and scientific writing' [Language centre LTK]
- Väitöskirjaohjauksen työpaja [Research and innovation services]
- GAP - Dealing with the media [Erkki Karvonen HuTK ???]
- Gap: short (½-1 day) basics of university pedagogies
- Gap:supervisor training

4 PERSONAL EFFICIENCY AND CAREER DEVELOPMENT

The following three themes are suggestions to fill in the gaps that were recognised in “personal efficiency and career development” course offerings. The themes are divided into suggestions for independent modules that offer different perspective and contents within the main themes. These modules or courses do not exist as such for now (even though in some cases there have been some occasional lectures etc.). This is why the resources to carry out the modules need to be considered separately.

4.1. Career development (either as separate lectures/modules or as a whole) [Carees Services]

1. personal skills and competences (lecture 2 hours OR workshop 4 hours)
 - a. what are academic skills and competences
 - b. how to recognize what skills and competences one has
 - c. what skills and competences need developing
 - d. how to use "HOPS" in making a skill development plan
2. career and career planning (lecture 2 hours)
 - a. what is a career
 - b. what is career planning
 - c. career anchors
 - d. post doc or something else
3. career management skills (lecture 2 hours OR workshop 4 hours)
 - a. CV
 - b. application writing
 - c. interview skills
 - d. portfolio

- e. social media
 - f. networking (traditional and in social media)
 - 4. "getting away" (seminar ½-1 day OR separate lectures and infos)
 - a. entrepreneurship
 - b. post doc possibilities
 - c. experiences of senior researchers [Infotech – how to get a PhD]
 - 5. CareerStorm Navigator (web-based career and life development tool)
 - a. info (1-2 hours)
 - b. individual working
 - c. group discussion
- parts 1-3 already exist in Finnish aimed for master's degree student; can quite easily be transformed for graduate students (then offered for international master's students, too)
 - the personnel resources at the moment are quite limited
 - actually a doctoral-student-counsellor is needed
 - CareerStorm Navigator multi-user licence is 500 euros / year

4.2. Personal and collective efficacy and learning skills

1. LEARNING PERSPECTIVE - How to improve academic learning skills?/OR / how to improve study skills for academic success [KTK - Learning and Educational Technology Research unit] (1day)
 - strategic planning and monitoring, e.g. setting aims and goals
 - learning strategies
 - regulating cognitive processes, motivation and emotions
 - collaborative learning
2. MANAGEMENT PERSPECTIVE - time management [For example OPINTOPSYKOLOGI or career management/Jaana Liimatainen]
3. General personal efficacy - Yleinen henkilökohtainen tehokkuus, [Bärbel Fink]
4. "HOPS"

4.3. Multicultural and Multidisciplinary issues

These themes need further explication on the content and aims as well as consulting from varying experts

1. Multicultural issues
 - Needs consulting from the office of International Relations, also other experts within the university
2. Multidisciplinary issues [WHO?]

- This is seen as an important issue. However, it is not rightly placed. It is suggested that this is better placed under title “3. communication skills”

5 MANAGING RESEARCH PROJECTS

- Applying for research funding
- Project management
- Oma tutkimus projektina -työpaja (2-4 op) [HuTK]
- Projektin hallinta [Thule]
- Tutkimushankkeen perusteet [Research and innovation services]
- GAP - Dissertation work as a project [Dr Mirja Väänänen?]
- Gap: yleisen projektitoiminnan peruskurssi

- **puhujia rahoittajaorganisaatioista**
- Tavoitteena hyvä hakemus -kurssi (2 op) [HuTK]
- Applying for research funding (2h-2pv) [Project services]
- Funder specific (Academy of Finland, Tekes, 7th framework programme) [Project services]
- Evaluation workshop (framework programme) [Research and innovation services]
- Intellectual property rights [Research and innovation services]
- Patent information in research [Research and innovation services]
- Patenti and product protection in business (5op?) [DIEM/ Research and innovation services]
- Intellectual property rights in research (2h-1day) [Research and innovation services]
- Commercial exploitation of results (2h-2day) [Research and innovation services]

Appendix 3 – Gaps in course offering of transferable skills at the University of Oulu

Category	Gap	Solution	Suggested organiser
2.1 ETHICS	Practice oriented course/seminar on good scientific practice	½ -1 day compulsory seminar (full course 1-2op)	University ethics committee
2.2 RESEARCH GENERAL	Introduction into theory of science (Capabilities to work in multidisciplinary research groups)	Principles of scientific knowledge creation and critical argumentation 3 credit points	[Väyrynen, Läärä]
3.1 WRITING SKILLS	Introduction into writing for general public	½ -1 day course	[Erkki Karvonen HuTK???
3.1 WRITING SKILLS	Insight into evaluation procedures	Evaluation day – article review, dissertation pre-examination, tasks of an opponent, evaluation of project proposals/grant applications	UniOGS committees
3.2 TEACHING AND PRESENTATION SKILLS	Dealing with the media	½ -1 day course	[Erkki Karvonen HuTK ???]

3.2 TEACHING AND PRESENTATION SKILLS	Basics of university pedagogies	½ -1 day course	KTK ???
3.2 TEACHING AND PRESENTATION SKILLS	PhD supervisor training	??	UniOGS
4 PERSONAL EFFICIENCY AND CAREER DEVELOPMENT	The entire category is fragmented	The course offering should be systematically developed	UniOGS
4 PERSONAL EFFICIENCY AND CAREER DEVELOPMENT	Basic knowledge over business functions to enable PhD to work in companies	½ -1 day course	[TaTK?] Veikko Seppänen?
4 PERSONAL EFFICIENCY AND CAREER DEVELOPMENT	Personal and collective learning skills	??	KTK [Hanna Järvenoja?]
5 MANAGING RESEARCH PROJECTS	Introduction to project work, own dissertation work as an example	1 credit point	[Dr Mirja Väänänen?]
