



# **Conference on Internationalisation and Quality Assurance**

University of Hohenheim  
16 - 17 February 2004

## **Proceedings**







# **Conference on Internationalisation and Quality Assurance**

University of Hohenheim  
16 - 17 February 2004

## **Proceedings**



***Editors:***

Prof. Dr. Karl Hurle  
Dr. Gabriele Klumpp  
Euro League for Life Sciences -780-  
University of Hohenheim  
D-70593 Stuttgart  
Germany

***Compilation:***

Dr. Gabriele Klumpp  
ELLS Secretariat  
University of Hohenheim  
D-70593 Stuttgart  
gklumpp@uni-hohenheim.de  
www.euroleague-study.org

Papers contained herein are printed almost exactly as submitted by the authors with only minor editorial corrections. Authors submitted their contributions electronically. The information submitted was formatted with a common font and layout for this publication.

The ELLS Conference on Internationalisation and Quality Assurance was organised by the Chair of the Euro League for Life Sciences, University of Hohenheim with the kind support of the Universitätsbund Hohenheim e.V.

***Printed by***

F. & T. Müllerbader, Filderstadt, Germany

## CONTENTS

<i>Hans-Peter Liebig</i> Welcome address to the ELLS Conference on Internationalisation and Quality Assurance...	5
---	---

### PART I: QUALITY ASSURANCE

<i>Stefanie Hofmann</i> Strategies for improving the quality of education and learning at European universities.....	7
---	---

<i>Paul Deneer</i> Quality assurance at Wageningen University.....	13
---	----

<i>Kristina Glimelius</i> Quality development and quality assurance programme for higher education at SLU Sweden.....	17
---	----

<i>Leon Brimer</i> Quality in university education – a KVL perspective.....	23
--	----

<i>Thomas Guggenberger</i> Perspectives for quality assurance at BOKU Vienna.....	27
--	----

<i>Ute Mackenstedt</i> University of Hohenheim: Quality assurance in education.....	33
--	----

<i>Flemming Frandsen</i> Working group 1: Admission of students to Master programmes.....	37
--	----

<i>Fons Werrij</i> Working group 2: Preparing students for a European or global market.....	39
--	----

<i>Willibald Loiskandl</i> Working group 3: Joint curricula: challenges for institutions and for students.....	43
---	----

### PART II: PRESENTATIONS OF ELLS SUBJECT AREAS

<i>Rolf Larsen</i> Horticulture.....	49
---	----

<i>Anja Kuipers</i> Plant and Crop Science.....	53
--	----

<i>Michael Kruse</i> Plant Breeding and Seed Technology.....	57
---	----

<i>Rene Kwakkel</i> Animal Science.....	59
<i>Ute Mackenstedt, Johannes Steidle</i> Summer school: Pathogens, Parasites and their Hosts.....	61
<i>Simon Blackmore, Thomas Jungbluth</i> Biosystems Engineering.....	63
<i>Hans-Peter Piepho</i> Biostatistics/Bioinformatics.....	65
<i>Erik Sundström</i> Forestry.....	71
<i>Aad van Tilburg</i> Social and Economic Sciences.....	75
<i>Hans Bronkhorst, Hendrik Klompmaker</i> ICT Supporting Education.....	77
<i>Hans Christian Bruun Hansen</i> Environmental Science.....	79
<i>Wolfgang Kneifel, Ulrike Zitz</i> Safety in the Food Chain.....	87
<i>Anne-Grethe Routley</i> Report of the International Relations Officers.....	91
 APPENDIX 1: ADDRESSES OF ELLS UNIVERSITIES AND LISTS OF CONTACT PERSONS AT THE ELLS UNIVERSITIES.....	 95
 APPENDIX 2: DOCUMENTS	
Memorandum of Understanding.....	101
Policy Document.....	107
Guideline for Subject Areas.....	113

## **Welcome Address to the ELLS Conference on Internationalisation and Quality Assurance**

HANS-PETER LIEBIG

Rector of the University of Hohenheim, D-70593 Stuttgart, Germany, rector@uni-hohenheim.de

Dear colleagues, dear friends, Ladies and Gentlemen,

I cordially welcome you all in Hohenheim, the most beautiful university of this state, Baden-Württemberg. You attend the first conference within the network of the Euro League for Life Sciences. The University of Hohenheim is proud to host this conference on Internationalisation and Quality Assurance and to offer our hospitality to our guests coming from the Swedish University of Agricultural Sciences Uppsala (SLU); the Wageningen University and Research Centre (WUR), the Royal Veterinary and Agricultural University Copenhagen (KVL), and the University of Natural Resources and Applied Life Sciences Vienna (BOKU).

The Bologna declaration has led to fundamental reform processes within the European Community. Increased mobility of students and teachers but also more competition between institutions for European higher education is anticipated. To meet the challenges and to establish better positions for this competitive situation cooperation of the universities on the one hand, international evaluation and accreditation of study programmes on the other hand are used. At the national level the consequences of the Bologna treaty vary according to the already existing concepts of higher education in the different countries. For Germany, the consequences are to give up the Diploma system and to invent the B.Sc. and M.Sc. programmes based on ECTS. Last year the German state ministers of education and cultural affairs agreed on the establishment of the B.Sc./M.Sc. programme until 2010 and the German universities are in the process of adapting to this concept, some reluctantly, some with more enthusiasm.

Internationalisation at highest quality level is important for all universities but it is essential for the universities dealing with agriculture. The changing position of agriculture for the national economy, the profound structural changes within this industry and the altered image of agriculture for the society have resulted in dropping numbers of students. The reaction of the universities is obvious from different activities. One is to change the university's name if Agriculture has been incorporated. Another, more market orientated reaction is to position the university at the European and the global scale, to provide international master courses and to establish B.Sc. and M.Sc. systems based on ECTS and this process had already been started before the Bologna treaty was signed.

But as I mentioned before, internationalisation is required for all universities and their subject profiles within the European Community and this process is inevitably linked with quality assurance. Comparing, identifying and improving the quality parameters followed by setting quality standards among European universities will enhance the reputation of the participating universities and will secure their ranking at the European and international level.

The Euro League for Life Sciences was established in 2001 as a network of leading universities with an agricultural background. The policy document summarises the main goals of this network as follows: **(quotation) „The Euro League for Life Sciences is a network of leading universities focussing on joint teaching and learning, students and staff mobility and quality assurance. These activities will result in highly qualified graduates prepared for the demands of the European and international market. Furthermore this network will enhance the national and**

**international position of all partner universities through sharing of expertise and resources as part of the development and implementation of their degree programmes“.**

Internationalisation and quality assurance is the topic of this conference. All member universities of the Euro League for Life Sciences have a high reputation as internationally orientated universities.

What is the basis for the higher level of education? It may be mentioned that Hohenheim cooperates with more than one hundred universities worldwide. The research activities in Hohenheim are organised and channelled by centres. In 2002 we have celebrated the 20<sup>th</sup> anniversary of the Centre for Agriculture in the Tropics and Subtropics, followed by the Eastern Europe Centre which coordinates the activities with East-European universities. Since 2002 the Centre of Entrepreneurship supports companies and their foundations and is involved in business management. At the moment we are concentrating our efforts on the Life Science Centre with the three research areas: 1. Biological signals and genomics, 2. Quality and biofunctionality of food and finally 3. Ecosystems and resource management. The university management regards the institutionalisation of the Life Science Centre as one of the main goals at the research level.

At the teaching level the faculty of agriculture offers two well-accepted international Master degree programmes with contributions of the faculty of natural sciences and the faculty of social and economics. To improve the English teaching programmes the senate of this university decided to establish a committee for international teaching affairs.

With this in mind, I am sure that this conference will support our activities and efforts. The workshops will provide important results which are important not only for the University of Hohenheim but also for the other member universities of the Euro League for Life Sciences. These results will be summarised at the end of this conference and will be published. Last but not least, Ladies and Gentlemen, I would like to thank the organisers of this conference and all the co-workers for all the efforts they have made.

Thank you for your attention.



## Strategies for Improving the Quality of Education and Learning at European Universities

STEFANIE HOFMANN

ACQUIN, c/o University of Bayreuth, D-95440 Bayreuth, Germany, hofmann@acquin.org

### I. The quality of teaching and learning – Why is this an issue? Change as challenge: changing “environment”

The sector of tertiary, i.e. higher, education nowadays faces a number of **challenges**. The prevalent trends may be described by

- The massification of higher education – never before in history have so many young people striven for an academic qualification. This holds true in absolute numbers as well as in relative terms, if we regard the percentage of high-school graduates accessing the higher education institutions.
- At the same time, demographic developments indicate, that in the forthcoming years there will be a dramatic decrease of the total number of students of the respective age cohort. Having worked and lived in one of the German “Neue Länder” in the late 90s and early 2000, I have had the opportunity to follow the closing down first of kindergartens, second, of primary schools, and, last year, the secondary schools. The critical date for the universities will be the year 2008. The impact of these demographic changes on the qualifications available on the labour market have been analysed permanently for the last decades. Still, the right cure is missing. The introduction of a “green card” for the German labour market, in this context, may be described as an endeavour that, however, failed.
- Higher education institutions see themselves in the flow of an increasing internationalisation. The discussions of the GATS-agreement in the recent years show how the predominantly positively connoted trend of internationalisation combined with another more “demonic” trend of privatisation highlights the fears and threats about globalisation – also for the higher education sector.
- At the same time, the higher education sector suffers from severe cuts in funding. Universities and other higher education institutions are expected to generate their own budgets, by offering and “selling” services, by conducting applied research. A requirement which may be reasonable to a certain, i.e. limited extent, but definitely not where the primary public responsibilities of state-owned institutions are concerned.

All these, more or less recent, challenges indicated here, mean a need for substantial change for the institutions of higher education. But where to start?

Quality is the answer. All too obvious. The German chancellor Gerhard Schröder started the year 2004 with a discussion on the need for elite universities in Germany. In order to safeguard today’s and tomorrow’s welfare of the German population, changes seem to be necessary. Whereas in the past the political debate (not only under the social-democratic government) mainly concentrated on the question of how to increase the percentage of the younger generation having access to (higher) education, the focus now seems to shift in the direction of more diversity and differentiation. The US-American “ivy-leagues” are to serve as a role-model. The public reactions on the chancellor’s proposal have been highly diverse and controversial. However, we can learn something of it for our own discussions here today: if we consider quality, we need to make clear, what subject we have in mind. Quality of the institution is quality of the outcome. Elite universities, or rather **high per-**

**formance universities** are not excellent because they exist. They prove their excellence in performance **outcomes**.

This is, second, closely connected to the question of “**institutional units**” of excellence. We have to analyse and decide, which might be the adequate unit of quality. There are good reasons to say that it shall be the university as a whole. One of the public reactions on the elite discussion was the suggestion to narrow the scope on individual faculties or institutes. A third possibility might be networks of excellence. In principle the identification of an institutional unit is preceded by the definition of a subject to be scrutinised in terms of quality or excellence. The need to define a **subject** is essential to any evaluation. To quote the German researcher on higher education Ulrich Teichler: “Some evaluations address individual programmes, disciplines or faculties, while others focus on the institution of higher education as a whole. They are based on different concepts about the extent to which the quality, relevance and efficiency in one area is influenced by their neighbours in the same institution.”

Last but not least, we have to make clear, what we mean, when we talk about quality and excellence; which is more than a merely terminological exercise.

### *The quality of teaching and learning – What is quality?*

#### *a. in general (definitions)*

#### *b. in terms of the Bologna Process (interpretations)*

“>Quality<,” to quote the representative of the German universities in the Council of Europe Jürgen Kohler, “--and what is meant is >good< quality, an attribute not necessarily included in the term >quality<-- is >everyone’s favourite<. ... All institutions of higher education obviously want to strive for quality, or at least they would not admit the opposite”.

But, what *is* quality? As Ton Vroeijstijn states 1995, undertaking this kind of definition exercise might be “a waste of time” (Vroeijstijn 1995, p. 12). Nevertheless, there exists a set of definitions which are broadly accepted in the international quality, and i.e. academic community. In general, they interpret quality in terms of “good” quality:

We find concepts of (1) “Quality as excellence”, next to (2) “Quality as threshold (minimum standards)”, (3) “Quality as improvement and enhancement (transformation)”; especially in the relation to a public demand for accountability and public responsibility: (4) “Quality as value for money” (or from the students’ perspective “Quality as value for the time invested”), and, last but not least, the concept of (5) “Quality as fitness for purpose” which is frequently combined with the concept of “Quality as fitness of purpose”.

These concepts can roughly be summarised in two categories: the smaller one – the one referring to the concept of quality as (minimum) standard – denotes apparently **an absolute concept of quality**. A standard is defined and fixed. And that is it. Quality is given, if it is identical with the preset standard. The other definitions may be summarised in the category of a more dynamic **relative quality concepts**, even though there may be an implicit assumption – or hope? – that something like an absolute quality exists, in the sense of “knowing excellence when seeing it”.

Quality as excellence, e.g., is a relative concept because excellence can and may be related to the scope and ambition concerned. Jürgen Kohler uses an analogy to underline the relativity of excellence: “There is such a thing as an excellent snack bar, one which is excellent because it produces excellent hamburgers that compare very well with hamburgers produced by other snack bars. But the very same snack bar may also be an appalling place in which to eat as compared to certain restaurants listed in the Guide Michelin. The same is true of institutions of higher education and their study programmes.”

Why is it important to make such kind of distinction between relative and absolute concepts? Discussions of quality in principle refer to *something*, not necessarily *anything*. We discuss quality standards and quality criteria. We have points of reference that help us determine whether our performance is good, or, maybe, not so good. We need to clarify, what our own points of reference are, who or what authority is in a position to set them. This is also a question of autonomy.

Coming back to the issue tackled here today – the quality of education and learning. The quality of learning outcomes is relative, since it is quality for somebody, and in this sense partner oriented. The quality of learning outcomes is relative to the expectations and demands of various stakeholder groups, i.e. students and society at large, both united under the umbrella-terms of personal development and employability. Simultaneously, the quality of learning outcomes is relative with respect to the objectives of the higher education institution itself – with a specific mission and profile – and the respective study programme realised by the institution – which may, e.g. either focus on research competences, or interdisciplinarity.

Relating the outcome of a planned and coordinated learning process, i.e. relating the outcome of a study programme to the programme's objectives as well as both the concept and the circumstances of its realisation, trying to identify possible deficits and suitable remedies – this, basically, is the translation of the relative quality concept of “**fitness for purpose**”. Scrutinising these programme objectives from the institution's own mission *and* the various stakeholders' expectations combines the concepts of »fitness for purpose« with the concept of “**fitness of purpose**”.

### ***Quality in terms of the Bologna Process***

The relative quality concept goes hand in hand with the specific Bologna challenges. The Bologna objectives, as they were described by the European Rectors and Rectors' Conferences in Graz, May 2003, are to be, first, academic quality, second, sustainable employability on a European labour market, and, third, mobility both in a vertical – lifelong – and horizontal dimension. The solution for the realisation of the European Area of Higher Education will be provided by study programmes and learning experiences that allow for comparability and compatibility.

The so-called Bologna Process aims at providing an answer to the challenges which I had described before. The process participants undertake to clarify the objectives and, thus, to substantiate the challenges, while proposing distinct tools in order to achieve the set objectives. This endeavour, simultaneously, in itself means a new challenge for the European universities. Its main objectives are the creation of a common, globally competitive European Higher Education Area while maintaining diversity of traditions (cp. Jürgen Kohler).

The »common« area of higher education on the one hand refers to the aspiration to develop a pan-European political, cultural, economic area to the benefit of Europeans, especially by ensuring mobility in Europe. This broader scope and the intended impact of the European Higher Education Area is, second, highlighted by the aspiration to be “globally competitive”: There certainly is a link to EU's aspiration to become the most competitive – knowledge-based! – area of the world by 2010; therefore, there is also an explicit link to questions of the European Research Area. For the higher education institutions themselves, these objectives translate in the need to address the quality issue, being aware of the need to develop an individual profile (competition!).

Profiling and individualisation correlate with the political objective, with which we all identify ourselves quite easily, to maintain “diversity of traditions”. The great challenge is then to identify and put into practice ways and means that safeguard both, the diverse profiles and characteristics as well as traditions and heritage of the European Area of Higher Education, and still allow for a common and joint experience (i.e. mobility). Instead of one-fits-all-solutions we need to find ways and means to “manage diversity”. The difficulty of this task becomes most obvious if we discuss language policies. In order to be able to strike the balance of convergence and diversity successfully, a number of finely tuned devices and tools need/needed to be developed.

On the one hand, we need to protect diversity/non-standardisation especially in the sphere of academic content(s) and teaching methods. On the other hand, there is a need to define common interfaces between stages of the learning process – e.g. what are the bachelor's common competences, what are the master's? - to ensure multiple »entrances and exits«, principally in three dimensions: in space (mobility); in time (life long learning); between academic levels and disciplines, to balance non-standardisation by making the differences visible and understandable, to ensure students' and stakeholders' ability to judge content and quality questions themselves (transparency!),

and, last but not least, to ensure high level aspirations (quality!), especially by integrating research (at least for universities in the traditional sense), with regard to personal development and employability and making provisions for a knowledge-based and democratic society.

The **tools** developed for this purpose – such as ECTS and the Diploma Supplement – are quite useful, even if their right implementation causes some problems. The shift from a teacher perspective to a learner perspective as implied in the ECTS is certainly one of the greatest challenges. The instruments for quality assurance such as evaluation and accreditation need to serve the aim of achieving the European Area of Higher Education's objectives.

## II. Improving the quality needs a quality management

The Bologna Process suggests a new kind of quality of teaching and learning which is to be measured against personal development and employability. Indicators are the outcomes of a learning process. The devices and tools need to be implemented. The presumptions of the whole process need to be reflected and digested, as the debates show, they should become a matter of faith. In addition to the overarching challenges, which I had listed before, this is another challenge to the European universities.

The decision to improve quality of teaching and learning is a complex statement. The improvement of quality proves necessary if the generated quality is not sufficient or satisfactory. The call for quality improvement is therefore preceded by a thorough assessment of performances, processes and their outcomes. The assessment is followed by an (internal and/or external) evaluation of strengths and weaknesses. In order to be able to state what a strength is and what may rather be a weakness, the higher education institution needs clarification of its points of reference – e.g. its own mission and objectives, or “external” benchmarks.

Convinced, that we are not aiming at random quality, but that we rather want to steer and control the quality of our initiatives and activities, we need to look for a targeted system, a management system that fulfils this purpose.

According to Klaus-Dieter Wolff's conceptualisation, quality improvement is part of a **comprehensive system of quality management** (cp. Klaus-Dieter Wolff). This system has in principle four facets:

- First, **quality development/generation**, i.e. the question, *how* does the institution generate quality? What are the underlying processes and procedures, the institutional, organisational and infrastructural prerequisites, the personal commitment and involvement, the scheduling and agreements that allow for planned and targeted activities?
- Second, **quality assurance**, i.e. the question, what does the institution do in order to *assure* the level and scope of quality? How can these planned and targeted activities as well as the underlying processes be sustained?
- Third, **quality improvement**, i.e. the question, what does the institution do – which, in fact, means: how does the institution *change* – in order to *improve*?
- Fourth, last but not least, **quality monitoring**, i.e. the question, how does the institution *know*, what level and kind of quality it realises? NB: Frequently, the discussion evolving around the issue of quality management is reduced or restricted to the aspect of quality monitoring. (Do you use student questionnaires? Do you systematically gather data on student success and failure? etc.)

What becomes immediately clear is the fact that quality lies in the first place in the institution's own responsibility. In this sense, the institution is an instrument that serves the aim of generating, assuring and improving the quality of its performances and activities. Quality in this sense is measured as outcome of a process. The process as such is objective- and target-oriented. It is based on short-, mid-, and long-term objectives and strategic planning. The organisational design of the institution follows the (necessities of the) programmes. Regular SWOT-analyses conducted against

the institution's own aims and objectives indicate the field of activities. Thus, the institution »plays« a quality cycle along a set core questions: What are the concrete aims (in relation to your mission and vision; in relation, e.g., to the Bologna objectives)? How does the institution try to achieve them (concept and implementation)? How to measure the performance (quality monitoring)? – Mind Life Cycles! – And: Where will you be in 10 years time? (quality improvement, iteration).

Referring to the concept of »Quality as fitness for purpose«, we can deduce the relationship between the university's endeavours and its own definition of aims to be achieved. »Purpose« thus describes the results to be achieved, on a short-, a mid- or a long-term basis. Results in a quantitative material sense (like numbers of graduates, employment rate of graduates six months after completion of studies) as well as in a more immaterial conceptual sense (competences achieved by the graduates, »client's satisfaction« as TQM-models describe students' and stakeholders' satisfaction with concepts of programmes and their realisation).

### **III. Quality Culture**

The development, assurance, monitoring and improvement of quality in teaching and learning at European universities needs more than just a mere technocratic quality management. The European University Association has been supporting this conviction since 2002 with a programme called »Quality Culture«, thus creating a new technical term which widely spreads all throughout Europe.

What is the added-value of quality culture compared to a finely tuned model of quality management? Generating, assuring, monitoring and enhancement of quality is always a matter of awareness and commitment, it has also an element of intrinsic motivation and satisfaction. Paying carefully attention to the personal (or »soft«) dimension of quality management may be called quality culture. Having a strategy for participation and involvement of all members of the institution, supporting everybody strategically in the development of »leadership« and »ownership« will be a both necessary and rewarding effort.

Hence, quality culture entails all activities, processes and procedures as well as the whole institution. Quality culture as such is anticipating and supportive. And, last but not least, quality culture needs a strong »leadership« – in the sense of senior leadership. Quality culture complements the techniques of quality management, i.e. the processes and procedures, institutions and tools. Those higher education institutions, being inspired and driven by a vital quality culture, pay attention to clear set responsibilities, provisions for communication and co-operations; they have a clear quality concept, mission, lead ideas, coherent programmes; they work along transparent timescales and have reliable milestones. We are aware, however, that it depends on both the cultural background and the legal background of the institutions how this can actually be steered and tuned. In addition, there is not such a thing as a blueprint, a one-size-fits-all solution. The implementation certainly is not an easy task. (External) support may be useful in some cases. Quality culture is the individual culture of the respective university.

### **IV. Conclusion(s)**

#### ***European Universities and Networks (not only) of European Universities***

The ministers stated during the last year's Bologna follow-up-conference in Berlin:

“...consistent with the principle of institutional autonomy, the primary responsibility for quality assurance in higher education lies with each institution itself and this provides the basis for real accountability of the academic system within the national quality framework.”

In order to support the institutions in their strive for quality, a strive which is accompanied by varying calls of various stakeholder groups, the ministers underline the need for “...national quality systems [These] should include ... International participation, co-operation and networking.” (Berlin Communiqué, 19 September 2003)

We see basically three levels of co-operation in terms of quality, especially quality as interpreted in the Bologna context. There is the co-operation of quality assurance agencies such as ours, ACQUIN. Networking of agencies counterbalances the fear of another supranational Euro-institution; it is based on the principle of mutual trust and aims at mutual recognition of procedures and results.

Second, there is the co-operation of universities and other higher education institutions. The Euro League is courageously challenging the idea of a European Area of Higher Education. The common aim is to put the focus of the network on “joint teaching and learning initiatives, student and staff mobility, quality assurance, policy development, strategy and internationalisation”. The idea of joint education – even of joint degrees – incorporates the idea of a European dimension as stated in the Bologna documents.

These joint degree programmes, which might be described as the epitome of the idea of a European dimension, in general focus all those quality aspects and concerns which also prevail in national institutions of higher education.

The strategic advantages of networks of universities are numerous: Clubbing (in/out); scaling; competitiveness; attractiveness. There are a number of synergies also on the level of intrinsic and extrinsic motivation, e.g. in cross-examining and a joint learning experience in any field of activity. There is, however, a long list of impediments, which ask for solutions. Starting with varying (national) legal requirements and reference systems, language policies, funding as well as recognition issues. Striking the balance between a centralised strategy and decentralised implementation is especially challenging in transnational network structures.

But there might be a decisive difference between national higher education institutions and these kinds of transnational ones: networks do have a joint objective, i.e. the successful implementation of a joint programme or joint degree programme. This implies that the partners in the network share in this respect a joint vision.

The third format of networking is between institutions of higher education and quality agencies in the sustainable development of a quality culture. I am glad to be here today and to be able to participate in your discussions and give some ideas of the work we are doing.

## References

- HOFMANN, STEFANIE: Most frequently analysed problems – analysis of the EUA’s Institutional Evaluation Programme’s outcomes (unpublished, 2003).
- KOHLER JÜRGEN: Institutionelle Qualitätssicherung statt Programmevaluation? In: Qualitätssicherung an Hochschulen – Neue Herausforderungen nach der Berlin-Konferenz, Tagung der HRK, Projekt Qualitätssicherung, 21./22. November 2003, Wissenschaftszentrum Bonn.
- KOHLER JÜRGEN: Quality Assurance, Accreditation, and Recognition of Qualifications as Regulatory Mechanisms in the European Higher Education Area. In: UNESCO-CEPES, Higher Education, Volume XXVIII, Nr. 3, 2003.
- TEICHLER ULRICH: Evaluation and Quality Development in National Environments. Presentation at the Launching Conference of the TEMPUS Project “Evaluation de la qualité – Région MEDA”, Sèvres (France), January 19-21, 2004.
- WOLFF KLAUS D.: Evaluation und Akkreditierung zur Qualitätssicherung – Elemente und Wirkungen. Referat, TU Delft, 26. Juni 2003, in der Arbeitsgruppe “Fortbildung“ im Sprecherkreis der Universitätskanzler.

## **Quality Assurance at Wageningen University**

PAUL DENEER

Wageningen University and Research Centre, P.O. Box 9101, NL-6700 HB Wageningen, The Netherlands, paul.deneer@wur.nl

### **Quality Assurance at Wageningen University**

- 1 internal quality assurance system
- 2 external quality assurance system
- 3 accreditation

#### ***Section Education Quality***

- educational support group
- officer education quality
- head education quality

#### ***Educational support group***

- 10 education experts
- short courses on didactics
- educational advice
- educational innovation projects:
  - competencies of the programmes

#### **Wageningen University**

- one faculty: 4 educational institutes
- 19 bachelor programmes
- 28 international master programmes
- PhD programmes

#### ***Bachelor programmes***

- 3 years: 126 credits = 180 ECTS
- 20 compulsory subject courses
- 4 restricted optional subject courses
- 5 optional subject courses
- project work

#### ***Master programmes***

- 2 years: 84 credits = 120 ECTS
- 2 compulsory subject courses
- 4 optional subject courses
- project work
- practical training
- thesis

### ***Schedule for all programmes:***

- 4 periods of 8 weeks:
  - \* 6 weeks for class rooms and practicals
  - \* 1 week for examination preparations
  - \* 1 week for the examinations
- 1 period of 10 weeks:
  - \* mainly practicals and included examination

### **1 Internal quality assurance system**

- course evaluation
- programme evaluation
- thesis agreement
- internship agreement

### ***Student evaluation of courses***

- every course every 2 years
- uniform written questionnaire
- 'signal values' for every question
- results go to the educational institute, programme committee and to the teacher(s)
- deviations are analysed and discussed
- results published on intranet
- weak points are improved

#### Part of the questionnaire

- this course had a clear design
- the written material was clear and understandable
- the teaching methods suited the goals and content
- the didactic performance of the teacher was good
- the course:
  - links well with the prior knowledge
  - has no annoying overlap with other courses
- I think I have learnt a lot from this course

### ***Programme evaluation***

- student questionnaires on parts of the programme
- figures on educational output:
  - students' progress in each study year
- higher education monitor: a national questionnaire for students a year after completing their study
- monitoring career development of WU alumni
- occasionally consult of employers

### **2 External quality assurance system**

- coordinated by the Association of Dutch Universities (VSNU)
- written self-evaluation on the programme:
  - \* guided by a checklist of the VSNU
  - \* based on programme evaluations
- external review committee for a specific subject area
- visit of 2.5 days
- report about the quality of the programme



### **3 Accreditation**

#### ***Bologna declaration June 1999***

- signed by 29 European countries to:
- establish an European space for higher education
- increase the competitiveness of the European system of higher education
- national accreditation of programmes in the Netherlands

#### ***Accreditation of degree courses***

- minimal quality requirements
- domain-specific fundamental quality
- international context

#### ***Accreditation framework***

- aims and objectives of the degree course
- programme
- deployment of staff
- facilities and provisions
- internal quality assurance
- results

### **Quality Assurance and ELLS**

- exchange of best practices
- ELLS reviews on courses and programmes
- ELLS reviews on theses
- participation in external review committees

#### ***Project competencies***

- 1 what
- 2 why
- 3 how

#### ***1 What are competencies?***

- many definitions: 'wicked word'
- a mixture of knowledge, skills and attitudes in a context
- 3 fields of competencies:
  - \* domain specific
  - \* professional specific
  - \* general or academic competencies

#### ***2 Why competencies for the programmes?***

- accreditation of the programmes
- admission to the master programmes
- enrolment of students in our programmes
- the interface of the programmes with labour market

#### ***3 Project formulation of competencies***

- the educational institutes have to formulate:
  - 8 to 10 core competencies for all bachelor and master programmes

***Steps in the project***

- describe the 3 fields of competencies
- determine some complex problems or tasks
- formulate 8 to 10 core competencies
- elaborate 15 to 20 sub competencies
- analyse the programme with the competencies
- if necessary: improve the programme

***Means to realise the goals of the project***

- educational institutes are responsible
- 10,000 Euro available for each programme
- assistance of the educational support group

## **Quality Development and Quality Assurance Programme for Higher Education at SLU Sweden**

KRISTINA GLIMELIUS

Vice-rector, Swedish University of Agricultural Sciences, SLU, Box 7070, 750 07 Uppsala, Sweden, Kristina.Glimelius@adm.slu.se

### **A short presentation of SLU**

SLU (Sveriges lantbruksuniversitet – Swedish University of Agricultural Sciences) is a university with a clearly defined role in society: to take responsibility for the development of learning and expertise in areas concerning biological resources and biological production. This responsibility stretches over the wide-ranging fields of agriculture, forestry and a food industry to environmental questions, veterinary medicine and biotechnology. A comprehensive viewpoint, inter-disciplinary approach and applicability are keywords in SLU's research and teaching and in the contacts with industry and society.

University activities are spread between several departments in four faculties: Faculty of Landscape Planning, Horticulture and Agricultural Sciences (Alnarp), Faculty of Natural Resources and Agricultural Sciences, Faculty of Veterinary Medicine and Animal Science and Faculty of Forestry. A total of 3,200 people are employed at the university.

SLU offers a broad spectrum of educational programmes and single subject courses. 5,300 undergraduates and 860 postgraduate students are enrolled at SLU.

Main campuses are located at Alnarp, Skara, Ultuna and Umeå. Research and teaching activities are carried out throughout the country.

### **Quality development and quality assurance**

The university has an ongoing and continuing process in establishing and maintaining a programme for active development regarding quality aspects. Revision of the established programme takes place every third year. The present programme dates back to October 2000, which means that we are right now in the process to make a revision. The excerpt below contains that part of the programme that specifically concerns fundamental higher education. The new programme will be revised during spring 2004.

### **Education**

#### ***Aims and goal***

Education at SLU shall maintain a high quality and give knowledge about, and a holistic perspective of, biological natural resources and mans sustainable utilisation of them. Teaching should be designed to not only impart such knowledge, but also be character building and prepare students for a life long professional career with continual competence development. Education should also provide a basis for research training and for development of research within SLU's relevant sectors.

## **Quality development measures**

### ***Recruiting***

In order to secure recruitment to SLU's different education programmes it is necessary for an on-going conscious commitment to quality to work with study information.

Study information shall be distinguished by development, accuracy and relevance with a clear SLU profile. Information shall reach prospective applicants throughout the whole country. New target groups of applicants shall be identified through a conscious commitment to information to non-traditional target groups and, where relevant, under-represented sex. At the same time the criteria for choice of higher education/university within traditional target groups shall be followed carefully to ensure that SLU shall not lose these groups. Recruitment activities shall be subjected to continual evaluations.

In order to give non-Swedish speaking target groups the possibility to inform themselves about the study programmes at SLU, such relevant information's material shall be available in both Swedish and English.

### **Types of teaching and basic pedagogic outlook**

Methods of teaching at SLU shall be designed in order to give students the responsibility for their own learning, and to stimulate and encourage students to take their own initiative as well as, if possible, give them possibilities to develop individual interests. Independent learning shall characterise teaching. Goal discussions with students are an important basis for alignment and requirement levels of courses.

Teaching at SLU shall be characterised by a holistic approach, in which subject integration and interdisciplinary thought are important foundations. The ambition shall be that both knowledge goals and goals to stimulate the students' character development and ability to independent learning are attained.

### **Pedagogy**

Teaching at SLU shall be based on an insight regarding the significance of pedagogy for teaching quality. Pedagogics at SLU is widely recognised and highly appreciated. Each programme should establish its own policy and adapt to didactics demands of the subjects taught. Diversity and different experimental models characterise the education. The subject's didactic demands shall be characterised by such a pedagogic diversity that the students' different aptitudes and learning skills can flourish. Pedagogic models and changes shall be systematically evaluated. Furthermore, discussions and debates are organised e.g. in seminars and as lunch/coffee meetings to promote development.

Teachers shall have completed a relevant higher education level of pedagogic training. SLU's policy is such that a teacher shall have a minimum of six weeks pedagogic training. Four additional weeks are required in order to achieve docent (associate professor) competence.

Department chairpersons, teachers and other personnel involved with teaching shall take an active role in the debate on teaching, participate in continued pedagogic training and in pedagogic projects in order to guarantee a continual pedagogic development of teaching. Teachers and students shall be offered training and support to enable them to utilise IT based teaching.

### **Forms of examination**

Examinations shall be further developed towards a more holistic approach, in which the learning worth of the actual examination moment is considered. The perceived drama associated with examinations should be played down. Different examination forms should complement each other, stimulate a real increase in knowledge and prepare students for the future demands from their cho-

sen careers. Representatives from potential employers should play an increased role and participate in the examination process in order for the latter demands to be articulated.

### **Undergraduate examination/project work**

The undergraduate examination or individual project work are important forms of examination. Clear instructions for these shall exist in order to ensure a high and consistent level of quality. The instructions shall include what requirements and quality criteria are in effect. Requirements should be adjusted to the time allocated to complete the projects. If the examination work is conducted within trade and industry there should be a prior agreement concerning conditions.

### **Role of the teacher**

The teacher's role requires, apart from sufficient subject knowledge and pedagogic competence, high levels of social competence and a capacity for empathy all of which should strengthen the student's personal development. The teacher's role changes continually and today's teacher is more of a guide, encourager and adviser than before. Today's teacher requires support in order to cope with this difficult task. Newly appointed teachers shall be offered a mentor from amongst the elder more experienced teacher corps as well as an introduction to the teaching assignment.

All teachers shall have an established plan for individual further education in both pedagogic and specific subject areas.

A teacher's pedagogic skill has the same merit value, and this should be judged with the same care as his/her research skill, when being considered for an appointment as a teacher. It is important to ensure that these appointment rules are followed.

### **Profession profile and connections to trade and industry**

SLU's study programmes shall give students a competence that is sought after within the employment market. Knowledge shall be useful for many years. It is therefore important to maintain an ongoing dialogue with employers within SLU's agro-industrial sectors. Trade and industry shall be represented in those preparatory and decision-making bodies within SLU that have responsibility for study programme contents.

Representatives of trade and agro-industry shall, to a much higher degree than at present, participate in teaching in order to give students better contact with work experience. Trade and industry connections in teaching can be stimulated by study visits, and individual personal contacts between students and employers can be fostered by e.g. joint projects and undergraduate thesis project work.

Undergraduate thesis carried out at private companies can be an important channel to increase industry's insight about the need of access to employees with academic training.

It is an important task of the ALC and alumni organisation to support such undergraduate theses. Another important task for the ALC is to inform customers/employers about the goals and contents of SLU's study programmes in order to facilitate student's possibilities to gain employment after graduation.

### **Internationalisation**

Teaching at SLU shall give students an international outlook and knowledge about conditions in other countries. Experience of studies in other countries broadens perspectives and gives understanding of cultural and ethnic diversity. SLU's study programmes shall be designed so as to conveniently enable student exchange both from and to SLU. The range of courses given in English shall increase to enable foreign students to take as many different courses as possible.

Internationalisation of undergraduate education is arranged in several different ways. SLU participates in two larger international networks or programmes. One is the NOVA University, which is collaboration between the agriculture universities and faculties in all Scandinavian countries. The other relates to the Euro League network. Several different collaborations and education programmes between international faculties and universities in certain disciplines have also been established, usually via the faculty in charge of the specific programmes. Besides this a large number of bilateral exchange contracts within the Erasmus network have been signed. All these are open for Swedish as well as foreign students.

Teachers will be encouraged to visit and teach at foreign universities. The character and length of a visit will be adjusted to fit an individual teachers needs.

## **Following up and evaluation of education**

### ***Self-evaluations of the complete study programme***

Programme and course evaluations are one of the most important tools to increase quality in the study programmes. Upon receiving his/her degree a graduate shall evaluate his/her entire degree course. The students make this by a comprehensive evaluation letter where the students are required to give their comments and evaluation to a large number of questions regarding the programme they have passed. Besides the questions each student has the possibility to provide his/her own remarks and thoughts to the programme. Each student has to fulfil the evaluation procedure before obtaining his or her examination diploma.

All study programmes shall be evaluated at regular intervals. These evaluations shall amongst other things comprise of an analysis of the programmes fulfilment of goals and implementation, relationship to the labour market, agro-industrial sector relevance, student volume, international circumstances and SLU's long-term educational strategy.

Programme evaluations shall be conducted with participants from our relevant customers e.g. agro-industrial sector. A study programme's relevance to professional occupations shall be evaluated by questioning former graduates who have three years post-graduate job experience.

### ***National evaluations made by the National Agency for Higher Education (UHÄ)***

All higher educations in Sweden are evaluated by UHÄ. National and international experts within the field of the programme to be evaluated perform this. The evaluations are performed by requiring a self-evaluation to be made by the university itself as well as by an evaluation performed by the hired experts. They are making site visits where the university teachers and students are interviewed and will be able to give their comments to the self-evaluation already made at the time for the site visit. After this an evaluation report is published with comments and suggestions from the experts. The authority UHÄ requests the university to implement the suggestions a certain period after the report has been published. The implementation is the responsibility of the faculties.

### ***Course evaluations***

Students who participate in or who have finished a course are given the possibility to evaluate the courses as well as to describe their experiences and express their opinions about it. This will be done through course evaluations arranged by the teacher responsible for the course. The responsible teacher shall also answer for a collation of all student evaluations and inform them about the results. Furthermore, the teacher will also inform about any changes to the course resulting from comments received in the evaluation. Results of evaluations will be made available to all students. Recently a common instrument for course evaluations have been established which is present on the web. This course evaluation, which will be made via the net, provides the students' view of the courses. The teacher's view of the results is easily compiled via the web-based instrument and the results will be presented in graphics and tables and are available to all students. A follow up procedure takes place

after each course and the teachers are obliged to implement the requested changes of relevance and also inform the students and programme committees about these.

### ***Student questionnaire***

Student questionnaires will be used to obtain knowledge regarding the students' experiences and judgment of the service and support given by SLU during their education. The questionnaire will be prepared together with the Student Unions and be carried out every third year. Questions shall complement course and programme evaluations and shall be designed so that results can be transferred to remedial actions. An annual follow up of remedial actions will take place.

### **Experience feed back**

The experience of other educational systems and teaching that students, teachers, researchers and other teaching personnel gain from studies and work at other universities and colleges of higher education are important foundations for development of SLU's study programmes. These experiences shall continually be utilised.





## Quality in University Education - a KVL Perspective

LEON BRIMER

The Royal Veterinary and Agricultural University KVL, 17 Bülowssvej, DK-1870 Frederiksberg, Denmark, Leon.Brimer@ifp.kvl.dk

### The start at KVL

At KVL the broad structured discussion about quality assessment and assurance/development now generally occurring at most universities world-wide, started already in the mid 1980's, with a report on procedures for a regular course evaluation. This led to a university-wide discussion of the so-called quality development circle and the establishment of (1) a KVL Committee for Teaching and Learning, (2) a compulsory course evaluation (to be done after each run) and (3) a procedure for the follow-up on results of course evaluations. Today there seems to be an international consensus that no unequivocal and simple definition exists concerning the concept of quality assurance in an institutional framework. Rather it is a matter of a number of procedures, each of which contributes to the regular assessment and necessary development. For an educational institution these shall ensure *the relevance* and *the correct level(s)* of the different topics covered by the curriculum in question as well as *a high quality of the learning environment offered* - as seen in connection with each of the single topics. With this in mind the existing quality system at KVL in the year 2004 can be described as made-up of a number of regularly ongoing activities and standardised procedures (components).

### Components of greater significance in the overall KVL quality system of today

A number of activities going on at regular intervals are tied-up to different KVL bodies. The gross structure of the present (\*) KVL management system is illustrated in Figure 1.

On the national level the requirement that all new university course programmes must be approved by the relevant ministry already assures a common national level. At KVL we find embedded in the shown structure (Figure 1) at least the following regularly ongoing activities of major importance when talking about quality assurance/development at the institutional level:

- 1 The yearly report of the directors of studies to the study committees
- 2 The Danish national system of using an external examiner (censor) - in addition to the internal examiner - at a majority of exams
- 3 The requests made by the board of external censors at KVL
- 4 The system of compulsory use of two examiners at exams having no external examiner
- 5 Students compulsory evaluation of each course after each run and the procedures to ensure implementation of necessary changes
- 6 Changes implemented as a result of student claims to the study committees
- 7 Supportive measures for students (run by the "Student Counselling" under the "Registrar's office) such as:
  - 7.1 Courses in "how to study" and "how to make a thesis"
  - 7.2 Individual student counselling
    - 7.2.1 Student counselling: Assist in cases of academic questions and difficulties, practical questions about being a student at KVL, or if you have personal or social prob-

lems. They also assist you in matters related to M.Sc. programs at KVL and qualification and application to these programs

7.2.2 International counselling: Assist KVL students who plan to go abroad as exchange students and international exchange students coming to KVL

7.2.3 Internship counselling: Assistance and inspiration to KVL students in matters concerning these project and internships

7.2.4 Admission counselling: Information about the B.Sc. study programs at KVL and assistance concerning qualifications and application to those programs

8 Pedagogic development of the academic staff by means of:

8.1 Compulsory 1-year courses in “Teaching and Learning” for all assistant professors at KVL

8.2 Short courses in “The development of a course”, “Supervision of M.Sc. and Ph.D. students” and “Voice and Appearance”.

8.3 Other (irregular) activities such as “ad hoc courses” with international experts as teachers, price competitions for teachers and student on pedagogical topics etc.

9 The arrangement by KVL of internships and projects for the students in cooperation with companies etc.

10 The impact on quality philosophies by international networking (e.g. NOVAPEDICTNET and activities to be launched by Euro League)

In addition to regular activities and standardised procedures it should be kept in mind, that also *ad hoc* activities such as internal evaluations of a greater part of a course programme and national- and international evaluations/certifications of programmes are part of the overall quality system. Example being the KVL EAEVE certification of the programme in veterinary medicine, the International Evaluation of Agricultural Science related B.Sc. programmes and the KVL initiated international evaluation of our own internationalisation strategy.

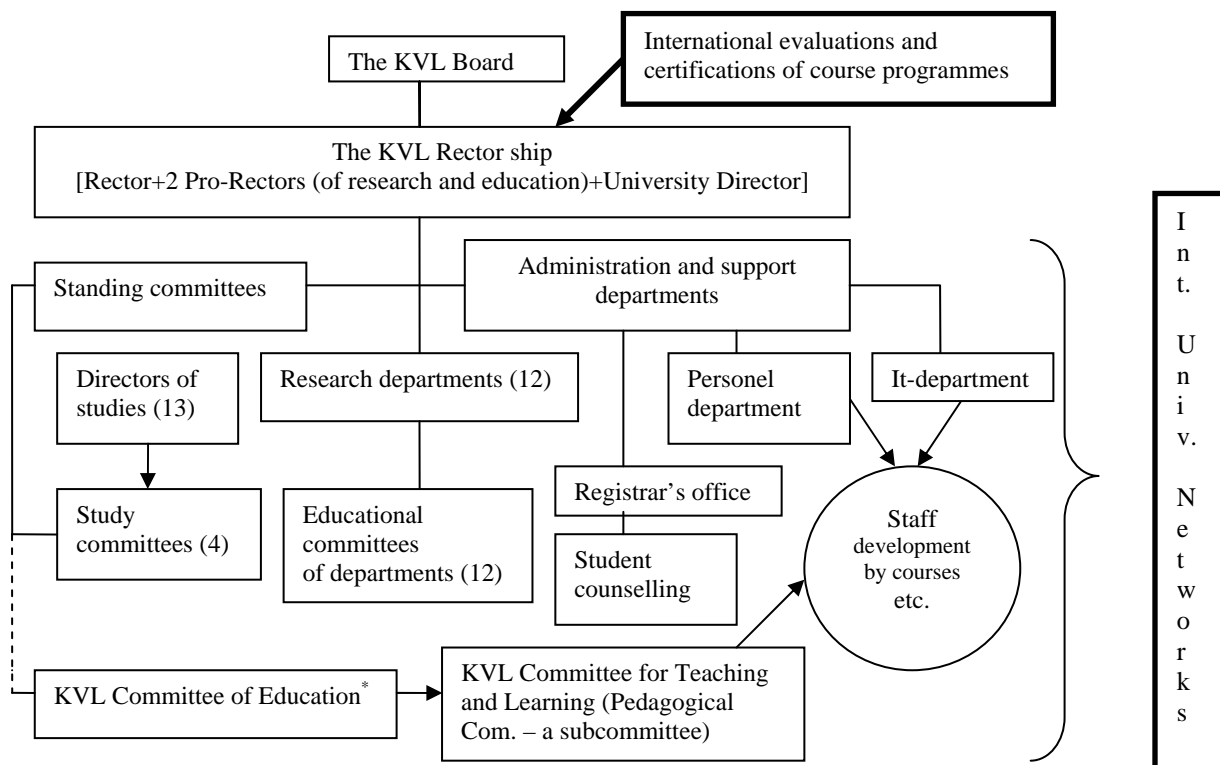


Fig 1. Illustration of the decision flow in the present management structure at KVL, as provisionally implemented in response to the July 2003 Danish University Act, and as influenced by international relations (bold lined boxes).

(\*) Committee directly under pro-rector of education.

## **Single components of special significance at KVL**

### ***The compulsory 1-year courses in “Teaching and Learning” for assistant professors (8.1)***

In the 1980s an act made it compulsory for all Danish universities to establish their own programme to ensure that new assistant professors get competences within teaching and learning. At KVL we have from the beginning taken this obligation very seriously. Thus we have developed a one-year part time programme together with the Danish Pedagogical University (DPU). During the course all ass. profs. are appointed two supervisors who follow their teaching activities, one from their KVL department and one from DPU. Furthermore they participate in three residential courses – of different length – as well as in several one-day courses at KVL, the themes treated during the year being the following: (1) The different forms within teaching, (2) Evaluation of teaching and learning, (3) Educational materials and IT in education, (4) Focus on supervision and group/case work and (5) Planning of educational activities. During the year the ass. prof. must collect a portfolio to be evaluated by the end of the year.

### ***The compulsory KVL course evaluation system***

The system is based on a KVL procedure described in paragraphs as follows:

§ 1. Part 1. All courses must be evaluated in writing by the distribution of an evaluation form to the course participants. Furthermore an oral discussion between the teacher and the students – of the results of the evaluation – must be arranged by the course responsible teacher at the end of the course. Part 2. For courses of 15 ECTS or more an oral midterm evaluation must furthermore be run, to allow adjustments during the remaining part of the course.

§ 2. Part 1. The course responsible teacher must collect the filled in forms and analyse them (see below) before the oral discussion mentioned in paragraph 1 part 1. Part 2. A full calculation of the distribution of answers for each question in the form must be made by the course responsible teacher.

§ 3. Part 1. Based on the analysis of the filled in forms and supplemented by the results of the discussion, the teacher must prepare a written summary of not more than 1 page A4. Part 2. The collected forms together with the summary must be delivered to the educational committee of the Institute. Part 3. The Educational Committee of the institute must discuss the material and make a note to the teacher containing their judgement and proposals for changes. Part 4. The filled in forms as well as the summary must be kept by the institute under lock for at least three years.

§ 4. Part 1. The Curriculum Committee for the course programme (e.g. the course programme of veterinary medicine) is responsible for the quality of the whole programme, and the Educational Committee of the institute must inform the Curriculum Committee about major problems identified.

Part 2. The Curriculum Committee may ask for the evaluation forms as well as the summaries made by the responsible teacher; for the courses that are under their jurisdiction.

At the present time KVL – together with institutions such as the Danish Technical University – is engaged in facilitating most parts of this procedure electronically, i.e. as embedded in our common study-administrative system “Campus Net”.

## **Conclusion**

KVL understands quality assessment, assurance and development as an overall process which integrates a large number of scheduled as well as *ad hoc* activities within the university and in collaboration with its partners. Being as complex a matter as described, we thus find further discussions of quality philosophies and standards by international networks such as the Euro League vital, in order to assure future course programmes to be of high international standard – and thus attractive – both from a content and a didactic point of view.



## Perspectives for Quality Assurance at BOKU Vienna

THOMAS GUGGENBERGER

BOKU, Centre for Education, Gregor Mendel Street 33, A-1180 Vienna, Austria,  
thomas.guggenberger@boku.ac.at

### 1 Berlin conference

Quality assurance was besides the two cycle system and the recognition of degrees and periods of studies one of the major issues on the agenda during the Berlin conference in 2003. In the Berlin communiqué the ministers of education stressed that “as for quality assurance, **consistent with the principle of institutional autonomy, the primary responsibility for quality assurance in higher education lies with each institution itself.**” This leaves quite some scope for universities to develop individual quality assurance systems which cover their specific needs.

### 2 Legal framework in Austria

The new Austrian University Law (UG 2002) which came fully into effect by January 2004 states in paragraph 14 that the universities have to design their own QA systems. The law leaves it open what this system should look like. It only requires that evaluations have to represent a crucial component of QA systems but does not demand accreditation. The following aspects have to be considered within the QA systems:

- Evaluations have to follow international standards.
- Evaluations shall be comprised as an ongoing exercise.
- All scientific staff have to be evaluated every five years.
- The results of evaluations have to be considered.

The international and national frameworks leave large autonomy to the design of a QA system as currently developed at BOKU in a proactive way.

### 3 Quality assurance activities at BOKU

In the following some examples of quality assurance activities which have been carried out at BOKU during the last 2-3 years are briefly described.

#### *Course evaluations*

BOKU was the first university in Austria to implement course evaluations in 1996. Its objectives are to improve individual lectures in terms of content, presentation, infrastructure etc. The most important lessons learnt during the last years were that there is a broad acceptance among teachers and a high level of participation among students. There was a gradual increase of the number of evaluated courses but virtually no consequences have been derived yet.

#### *Evaluation of the curricula of “Biotechnology and food technology”*

When the old diploma studies were substituted by new Bachelor and Master programmes an evaluation was carried out to review these new curricula. First a comprehensive situation analysis was carried out and benchmarking activities were undertaken. This was a good basis for the development of a self report. Then workshops were held and the new study programmes were

designed. A peer review was carried out by national and international experts to receive support for the design of new curricula in terms of content, didactics, structure and organisation. The peer review mainly focused on these new curricula, the recommendations were taken into account and the implementation started in October 2003 with the launch of the new study programmes. The most important lessons learnt include:

- Importance of empirical data basis
- Importance of external reconfirmation of the ideas of the working group
- Advantage of an external firm to raise the data and carry out the evaluation
- The Chairman of the peer group contributed largely to objectivity in the discussion
- The suggestions of reviewers were broadly accepted
- Motivation of BOKU staff increased
- Some follow up activities are still to be implemented

### ***Quality audit at the Centre of International Relations***

In 2001 a quality audit was carried out by the Centre of International Relations to evaluate BOKU's international strategy and its implementation in reference to teaching, research and services. The experts for this peer review came from IROICA, the European network of international relations officers at higher education institutes and related sciences.

The procedure started with a self report, followed by a workshop with the international experts who carried out the interviews with the major stakeholders of internationalisation at BOKU. The feedback of the external and internal experts was included in the final report.

The integral focus of this evaluation was of advantage as the investigation took into account the correlations between programmes, departments and service units. The existing network of experts was found useful, the other partners of IROICA also profited from the workshop. Next time more representatives at BOKU who are critical of internationalisation shall be included.

One immediate consequence was the establishment of an international board to coordinate the implementation of the follow-up activities.

### ***Individual evaluation of academic staff***

During the last three years new professors at BOKU were only given temporary contracts ranging from five to seven years. This required an internal quality assurance process to check to which extent professors had fulfilled their contracts. This process also helps to set the basis for future contracts. The internal evaluation board consists of the vice rectors and the research speakers. This committee elaborates on the basis of the research data (<http://www.boku.ac.at/research/>) and other data a report about each candidate. After the candidates had commented these reports the performance of the professors is discussed in the committee and a final resume is elaborated. Finally a conversation between the rector and the professor takes place.

Major lessons learnt are that the initial situation has to be defined more precisely before professors take up their duty.

- The objectives have to be defined more precisely,
- The consequences have to be defined before the realisation of the evaluation,
- Longer observation periods are necessary,
- The evaluation procedure needs continuous refinement.

### ***Evaluation of the orientation phase of all 5 diploma studies at BOKU***

At the beginning of each diploma study there is a so-called orientation phase of 8-12 teaching hours which helps the students to get an overview of the study programme. As the transition from high school to university is a crucial phase for the students, the students' organisation at BOKU carried out an evaluation to find out to what extent the orientation phase helps to prepare the students for the diploma studies and how to reduce the drop out rate.

The students' organisation was supported by an external expert who conducted the evaluation. They made interviews with the representatives of the study commissions, handed out questionnaires to the students and elaborated a report which was finally presented. Further evaluations and studies in the pedagogic field are recommended to find out more about teaching and learning processes.

### **Graduates' questionnaires**

At BOKU inquiries were realised among BOKU graduates to find out about the impact of the study programmes. The graduates had some years of working experience in the field and were asked about their working experiences and how they evaluated the study programme in general and the different modules. Some graduates' questionnaires had the focus to reduce drop out and how to shorten the average study period of about eight years, which is quite long. The recommendations of the graduates were taken into account for the design of new curricula.

## **4 Major work packages planned for 2004 and their relevance to QA and teaching**

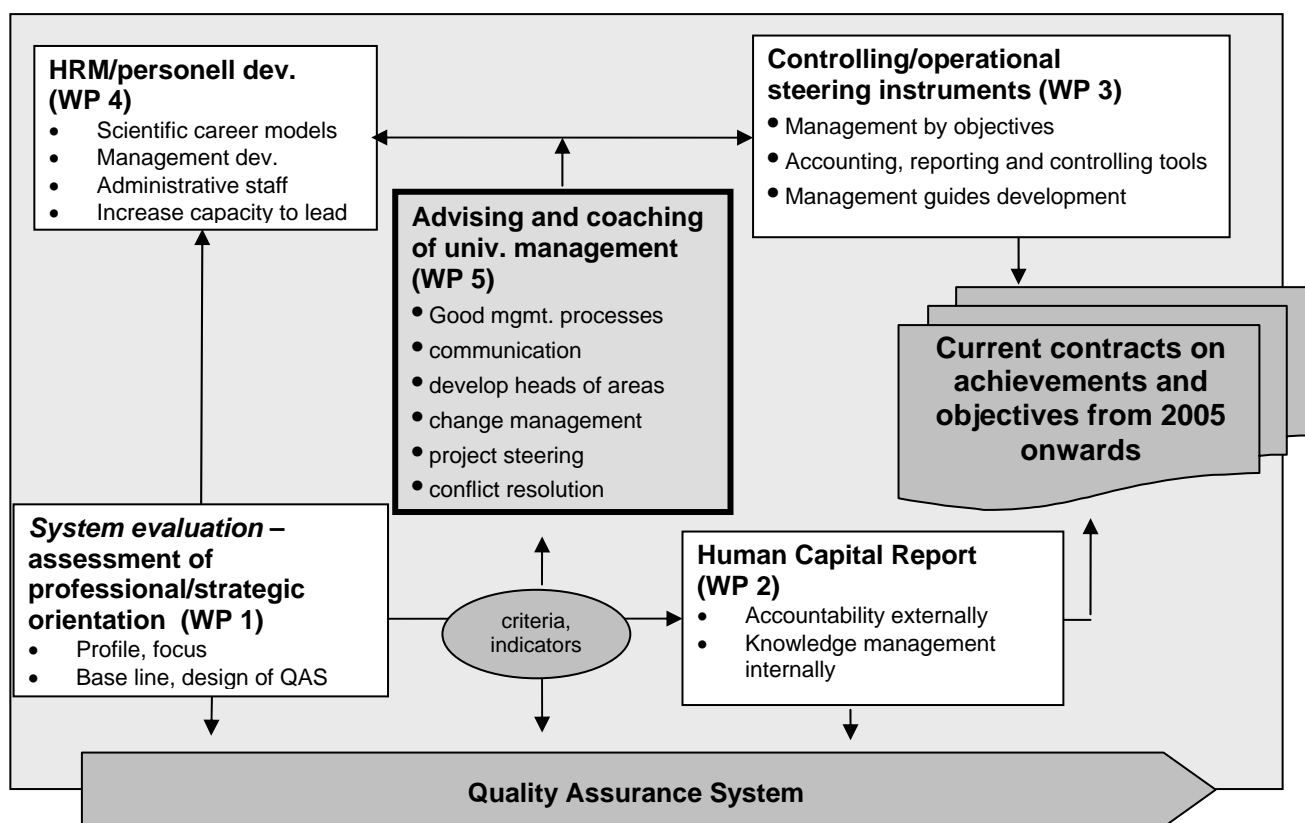


Fig.1: The major work packages (WP1-5) at BOKU for 2004

In the following the five work packages are briefly described with their relevance for quality assurance and educational issues.

### **WP 1: System evaluation**

#### ***BOKU profile development***

The “system evaluation” comprises an assessment of the profile of BOKU which has been developed during the last three years including the competence fields and the strategic and international positioning. Important elements are to achieve an external view and to set a baseline for further evaluations. This evaluation will lead to a more precise future BOKU profile (5-10 years) and it will support the development of the new departments.

### ***Teaching***

BOKU has undergone major changes in teaching; two thirds of the old diploma studies were changed to the Bachelor and Master system which lead to 20 study programmes in the academic year 2003/04. Therefore a key question of the evaluation is whether the range of study programmes is too wide and if so, what shall be focused on. Other aspects are the level of high school graduates, the access to Bachelor and Master programmes and the demands which our graduates have to meet in the field.

### ***Research***

In reference to research activities at BOKU an assessment of the research portfolio, the research strategies and co-operations shall be undertaken. This shall help to redefine the research strategy including funding strategies.

### ***Staff development***

So far staff development was strongly determined by the Ministry of Education and Sciences, the new University Law gives way to shape careers for scientists and administrative staff. This formative evaluation shall help to develop new concepts for human resource management.

### ***Quality assurance system***

This assessment shall also help to design a future quality assurance system and to define criteria and indicators. The aim is to develop key indicators which can be applied in other work packages, too. This QA system shall lay the basis for future evaluations. Another important issue is the development of a quality culture, in first place awareness has to be risen in the whole institution.

### ***Follow up***

The results of this system evaluation are expected by September 2004 and shall have an impact on the elaboration of the first human capital report at BOKU, on the controlling and operational steering instruments and on the human resource management. Apart from the rectory and the senate, the results of this evaluation shall support the development of the new departments.

## **5 Areas of cooperation within ELLS**

The ELLS constitutes a very appropriate forum for cooperations in the field of QA. The following activities can be taken into consideration:

### ***Joint activities in general:***

The information and exchange of experiences on activities, projects, best practise models for evaluation, QA and for the development of internal quality assurance systems shall be exchanged among ELLS members. Therefore a mailing list and the communication through the ELLS homepage can be suitable tools. The conference in Hohenheim is already an important step to foster such an exchange.

Comparative evaluations at ELLS member institutions could be realised. For some evaluations the comparison between all or some ELLS members may be a real asset as they cover the same subjects and probably pursue different strategies in different contexts. Subjects of such evaluations may be specific aspects of teaching and learning processes, curriculum development, e-learning etc.

### ***Joint activities in particular:***

- 1 Combine curriculum development with quality assurance



As within the ELLS various curricula are being developed, it would be reasonable to combine these efforts with QA activities. Such activities could focus on process evaluation and could lead to the design of best practice models for curricula development and to models for the evaluation of international Master programmes.

## 2 Set up a working group on QA within ELLS

A working group on QA issues could be of great advantage for all ELLS members. It could include the following activities:

- Make explicit the quality level within the ELLS
- To foster a continuous exchange of information
- Elaborate solutions for specific tasks and/or problems which are related directly or indirectly with QA issues
- Foster capacity building. There is a need for training for scientists as well as for administrative staff in the area of QA. Staff exchange might be an efficient way to build up expertise among ELLS members (e.g. study visits and mutual participation in evaluations).
- Development of internal QA systems. As this task becomes more and more important within the Bologna Process, the efforts for single institutions could be reduced due to an exchange of information, co-operations and joint activities.
- Realise training workshops
- Realise joint workshops

It shall be mentioned that it is feasible to apply for EU funding from Socrates/Erasmus for some of the activities mentioned above. Therefore it will be definitively an advantage to include partners from Eastern European countries.



## University of Hohenheim: Quality Assurance in Education

UTE MACKENSTEDT

Pro-Rector of Education, University of Hohenheim, D-70593 Stuttgart, Germany,  
mackenst@uni-hohenheim.de

The University of Hohenheim is one of nine universities in Baden-Württemberg. On a regular basis, their pro-rectors of education have meetings with high-ranking officials of the Ministry of Science, Research and Art of Baden-Württemberg to discuss, co-ordinate and initiate new concepts and programmes in order to improve the quality of education and teaching at the universities.

The discussions so far resulted in:

- 1 The establishment of a Centre of Higher Education:  
The centre of Higher Education provides seminars and programmes for university staff to improve teaching abilities and to secure the quality of teaching. As a result, the so-called Baden-Württemberg Certificate of higher education is awarded to those staff members who participated in all seminars required.
- 2 Award for quality in teaching:  
Every year students of each university nominate staff members for their superb qualities in teaching. Each university selects one staff member for awarding the prize for extraordinary teaching abilities. The award is granted by the Ministry of Science, Research and Art of Baden-Württemberg.
- 3 Programmes for the improvement of teaching and education:  
The Ministry of Science, Research and Art of Baden-Württemberg provides financial support to initiate new projects for the improvement of teaching such as tutorials, innovative projects (e.g. e-learning), mentoring. However, the ministry supports these projects for a few years only, the universities are responsible for the implementation of these programmes on a regular basis.
- 4 New B.Sc. and M.Sc. degree programmes must be approved by the Ministry of Science, Research and Art of Baden-Württemberg. Three years after the start of a new programme, the accreditation is initiated in order to continue with the degree programme on a regular basis. The accreditation process includes an evaluation by external reviewers.
- 5 The university law demands the evaluation of course programmes.

### University of Hohenheim

(see Figure 1)

The discussion about quality assurance in teaching and learning has started several years ago and resulted in a regular course evaluation at faculty level. Each faculty developed its own evaluation procedure. A working group has been established to link the different activities and to generate one evaluation procedure for all faculties. In 2004 the course programmes will be evaluated on the basis of the new evaluation process. The faculties (especially the Deans of Education) are responsible for the follow-up on results of the course evaluation. Problems in the evaluation process as well as the generalised results of the evaluation will be discussed in the working group “Quality Assurance in Teaching”. Recommendations are provided which will lead to intense discussions in the Committee of Education, the senate and the administrative board of the university.

At faculty level, the Dean of Education heads the study committee, which carries out the evaluation and is responsible for the follow-up. It is of great importance that the faculty is responsible for the follow-up of the evaluation procedure.

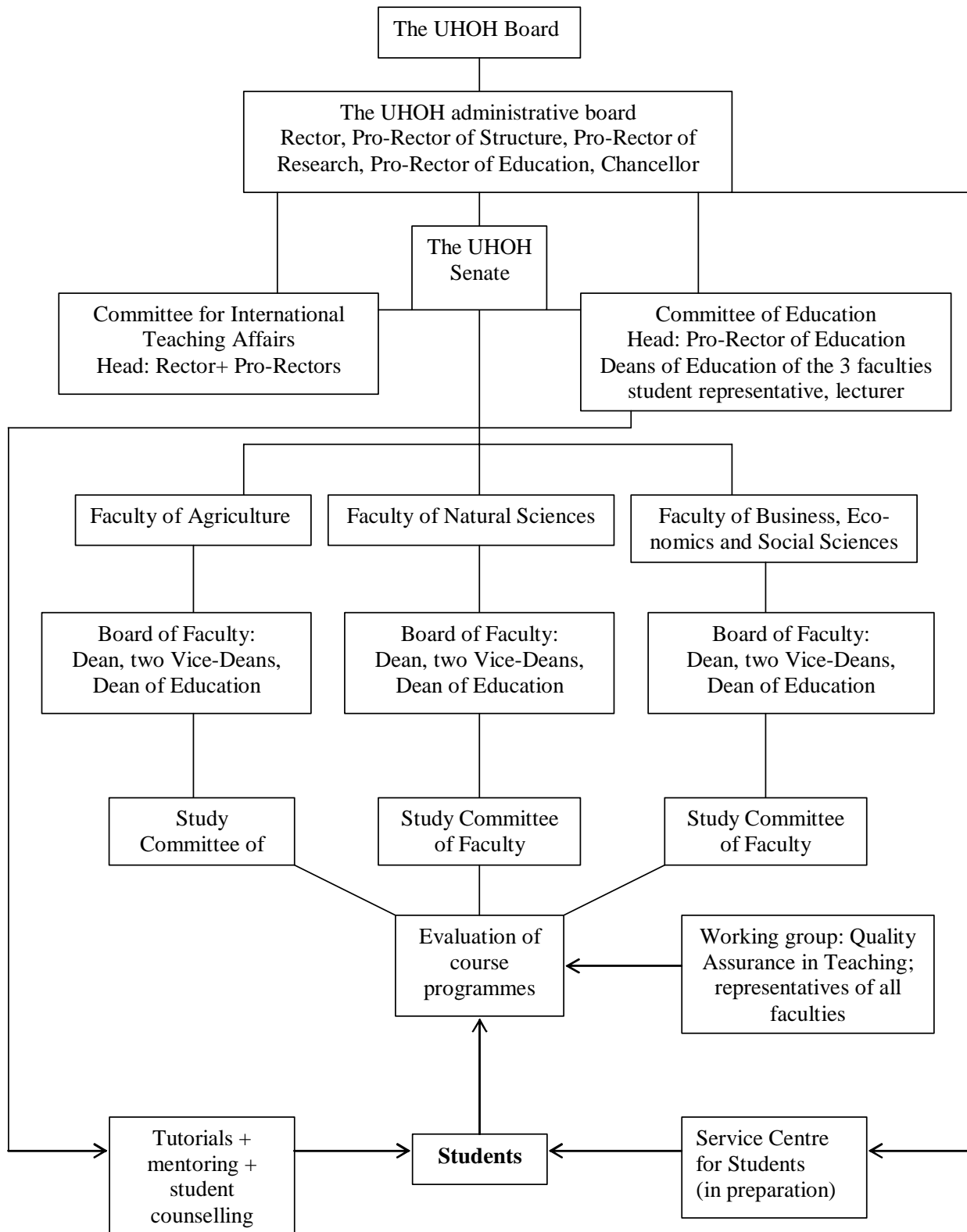
The system is based on the following procedure:

- The courses are evaluated in writing by the distribution of an evaluation form to the course participants. An oral discussion between teacher and students must be arranged at the end of the course. Mid-term evaluation is possible for long-term courses.
- The evaluation forms are collected and analysed by the faculty (supported by the administration of the university) which will inform the teacher about the results before the end of the course.
- The study committee will analyse the results of the whole evaluation as well and may suggest adjustments to the teachers in charge.

### **Summary**

The University of Hohenheim is in the process of improving the quality assessment and assurance and understands the further development as an overall process for all institutions of the university. They will integrate the activities of partners such as the Centre of Higher Education. Quality assurance is a very sensitive complex and therefore, the discussions and the comparison of systems within a network such as the Euro League for Life Science are vital to improve, change or modify the quality standards not only of the home university but also of the whole network.

Fig.1: Organigram of the University of Hohenheim





## Admission of Students to Master Programmes

FLEMMING FRANDBSEN

Pro-Rector, The Royal Veterinary and Agricultural University (KVL), Bülowsvej 17, DK-1870  
Frederiksberg C, Denmark, fnf@kvl.dk

### Report

In general there was a very good and lively discussion among the participants, and the following report is concentrated on the aspects of common interest. The discussion was primarily dealing with critical issues and their solutions.

Candidates for admission to the Master Programmes have very different backgrounds:

- A) Bachelor's degree from universities. The time for obtaining a B.Sc. may be 3 or 4 years. At some continents (Asia primarily) there is a differentiation between a bachelor's degree with or without a thesis.
- B) A profession bachelor's degree may be achieved at a Hochschule, profession universities, university colleges and polytechnics etc.
- C) Most European countries have signed the Bologna declaration, but there is still a transition phase, even among the ELLS universities.

### A) Admissions of candidates from Group A

Admission can be divided into two groups:

- 1 Students from European universities
- 2 Students from universities outside Europe and North America. Criteria such as English language proficiency, quality of the courses of the bachelor's programme etc. must be considered.

In general there must be no barriers between the partner universities within ELLS. This also covers students from collaborating universities for instance partner universities within the Erasmus programme.

There must be no restrictions between ELLS universities, free movement – this means for example that a bachelor's degree in agronomy gives admission to master programmes at all other ELLS universities.

### B) Admission of candidates from Group B

Admission requirements concerning the profession bachelor's degree differ among the five ELLS universities, but the political message in all countries is free movement, and that the two types of degree have the same value. However, to be certain of the quality and the scientific progression in the master programme, the content of the B.Sc. must be considered – balance between theoretical and practical experience. The focus must especially be on the basic sciences elements.

In some EU countries there are possibilities for B.Sc. candidates, especially with a profession B.Sc., to obtain required course elements within a short 3 months period. More knowledge on this area among the ELLS universities is needed.

### **C) ELLS and the Bologna Declaration**

As mentioned in C) there are still some problems to overcome also at the ELLS universities in regard to the Bologna process. In 2003 a survey on the topic was carried out and a report was presented. An action plan for following-up on the report is still missing.

A very big problem among the European universities are the differences in grading systems. In some countries each university has its own grading system, in other countries there is an official grading/marking system, which may consist of a very differentiated system or a very simple pass/fail system.

Also the evaluation of courses and final examinations vary considerably between the ELLS universities. There is a need to describe the various forms and processes and thereby give an opportunity to identify critical issues.

The Bologna Declaration suggests a common grading system (the ECTS Grading Scale) – a complementary system to the ECTS credit point system used in characterisation of the student workload.

There also seems to be differing interpretations and procedures for implementation of the ECTS credit point system at the ELLS universities. Clarification of the use of ECTS may improve the transference/acceptance of merit obtained at other universities.

Knowledge of the recognition process for B.Sc./M.Sc. at each ELLS University is needed.

Admission of students from overseas universities creates many problems and each of the universities has its own way of making quality assurance of the degrees presented from the unknown universities. Most universities in ELLS as well in the EU try to make their own clearing list.

Overqualified students – meaning M.Sc. or PhD candidates who want to study a new master – are a big problem at some ELLS universities.

### **Recommendations**

The following recommendations are referring to the admission of students to M.Sc. programmes at the ELLS universities but also to mobility, visibility and recognition of practise at the member universities.

- Free movement of bachelor candidates among ELLS universities
- A common clearing list on accepted universities in the developing countries for ELLS universities
- Increase knowledge of ranking systems; perhaps it is possible to adjust the systems at the ELLS universities
- Exchange of know-how among the student admission committees at the ELLS universities
- Grading systems – increase knowledge of grading systems at ELLS universities
- Adaptation of application forms and deadlines
- Standard procedures in the use of ECTS
- Tests for English language skills (TOEFL and Cambridge) must be elucidated
- A clarification of the problem of overqualified candidates for admission to M.Sc. is needed.
- An overview of evaluation/examination forms at ELLS is needed.



## **Preparing Students for a European or Global Market**

FONS WERRIJ

General Advisor Public Affairs and International Cooperation, Wageningen University and Research Centre, P.O. Box 9101, NL-6700 HB Wageningen, The Netherlands, fons.werrij@wur.nl

### **Introduction**

It is generally assumed that students, after completion of their academic education, should be able to consider Europe – if not the whole world – as the market place where they can valorise their degree in suitable jobs. It may be doubted though if this assumption reflects a realistic opportunity that is easily attained by many students. In reality it is observed that alumni do not show a great tendency to swarm out over Europe, rather the tendency prevails to live and work in the region of birth and education. One of the questions that may be asked in this perspective is whether students are adequately prepared for the international market when they leave the university.

A working party at the ELLS Conference on Internationalisation and Quality Assurance in Hohenheim, Germany, on 16-17 February 2004 elaborated on this question and attempted to identify at least some elements in the ‘ensemble’ of aspects related to preparing students for the international market.

At first the working party made the distinction of the European University System and the professional job market as separate markets and subsequently focussed its deliberations on the professional job market. Secondly, it was tried to define the qualifications of a ‘prepared’ student as compared to a ‘not-prepared’ student. Lastly it was attempted to recommend what particularly should be taken care of in the curricula so as to better prepare students for the international job market.

### **The European universities and public research organisations as a job market**

Both for students and alumni the European universities and public research organisations constitute a completely open and easily accessible market. It offers jobs with more or less uniform qualifications and the terms of reference for social and professional satisfaction, as well as for financial remuneration are easy to understand. Moreover: A plenty number of national and international instruments is available to provide ample additional financial support for those that want to exploit that market. “Anybody who wants to go abroad can do so” was the general agreement of the party.

Yet it was observed as a particularity that the reason for going abroad for study or jobs very seldom is scientific or professional. The reason for going abroad in most cases is desire for adventure, cultural curiosity or better salaries. It was hypothesised that curricula inherently focus on regional or even local opportunities and attitudes and in doing so unintentionally suppress the curiosity and ambition for foreign scientific approaches and professional endeavours.

While this observation was held valid for the whole field of agricultural disciplines, it was also nuanced that within the fields of molecular sciences the inclination to go abroad is strikingly more manifest.

### **The professional job market**

In contrast to the sector of universities and public research the international job market is highly complex and deeply interconnected with regional and national social, cultural and economic atti-

tudes and regulations. A most important and complicating factor in this field is the great variety of societal partners that offer jobs: Governments and governmental agencies (be it international, national or regional), industries and companies (multinational, national, SMEs), commercial consulting and advising companies, organised interest groups (NGOs, CSOs) etc. All those provide jobs with highly diverse social-economic qualifications and financial conditions. The working party supposed that this variety in conditions and qualifications is predominantly perceived and interpreted as uncertain and risky; and would therefore not be considered to be a privileged advantage for building a career.

A second major aspect of professional jobs is that the academic disciplines and skills that are required in a job are mostly much more generally defined (viz: 'researcher' or 'scientist') than the rather specific set of (sub)disciplines that constitute the qualification as e.g. 'phytopathologist' or 'molecular biologist'. This means that the professional job market is more interested in the broad ability to investigate than in the very specific disciplinary knowledge at the end of the curriculum. Moreover very often professional skills (e.g. marketing, production management, human resources) are required that have not been included in the curriculum. Both requirements, the broad application of academic skills and the employment of professional skills weigh extraordinarily heavy in an international context as there they are being complicated with foreign attitudes and regulations.

Grosso modo the international job market can be entered along two different routes: as independent individual that applies for jobs in foreign organisations, or as employee of a company with foreign branches and being expatriated. In both cases the perspective of success is highly depending on the ability to anticipate and adapt to the foreign social and professional context.

### **The prepared student**

Based on the above analysis the working parties derived three general qualifications for a well prepared student to successfully enter the international professional job market:

First of all the student should have well developed ability to communicate in 2 or 3 foreign **languages**. This should be such that in reasonable time a practical communication skill can be acquired in any of the modern languages. Communication at professional and social level is of crucial importance in building an international career. Secondly: the student should have a well developed **intercultural competence** for professional cooperation and social behaviour. The student needs to understand and cope with different standards of performance and quality. Thirdly the student should have acquired an attitude of **aloofness towards the degree or grades**. In international context the degree is considered to be a basic prerequisite and grades for individual disciplines may often be considered irrelevant for the specific job. High grades may even be considered to be a sign of narrow-mindedness.

All above aspects were considered to be additional to a sound and recognised academic education. That is considered to be basic and conditional, but no more than the admission ticket to the market.

### **How to prepare the students**

It was agreed among the participants of the working party that language education is not a task of the university. Proficiency in 2 or 3 foreign languages should be a prerequisite to enter the university education system. However, the didactic methodology of the university should allow for keeping the proficiency at working level. The working party recommends therefore that the ELLS universities present a significant number of lectures, trainings and courses in foreign languages, preferably, but not exclusively English. It goes without saying that in these cases also the examination would be in the foreign language.

The development of intercultural competence and aloofness towards degree and grade should be considered as a task of the university. One way of implementing this may be the development of

dedicated courses and training. However this may lay too great a claim on the available study time and could therefore have a negative effect on the academic level of the curricula. However a limited number of courses on voluntary basis might be appropriate. A more implicit, but very effective way is to mainstream these aspects in the existing educational practice. This approach requires two actions: adaptation of the didactic methodology and training of the docents and professors. The working party assumes that this approach would not impair the substantial content of the courses, but – in contrast – would make them more relevant in an international context.

With respect to the current didactical system it was discussed and concluded that this is exclusively oriented on the development of personal knowledge and skills and – moreover – on the individual employment of the knowledge and skills. At the same time increasingly it is demanded that academic professionals are able to cooperate in – very often – multidisciplinary teams. It is recommended by the working parties that the ELLS universities adapt their didactical methodology such that the ability to work in (multidisciplinary) teams is developed and trained.

### **Conclusion**

The working party recognises and appreciates the endeavour of the ELLS universities to better prepare the students for the international job market, however they observe at the same time that the content and orientation of the curricula is not promoting – if not suppressing – the students' ambition and desire to enter the international job market. Important handicaps are the intercultural competence and aloofness towards degree and grade. The working party recommends the ELLS universities to reconsider the didactical methodology of their curricula, courses and trainings so as to overcome these handicaps.



## Joint Curricula: Challenges for Institutions and for Students

WILLIBALD LOISKANDL

Institute of Hydraulics and Rural Water Management, BOKU-University of Natural Resources and Applied Life Sciences, Gregor Mendel Straße 33, A-1180 Vienna, Austria,  
 willibald.loiskandl@boku.ac.at

### Introduction

In the following the outcome of a workshop held at the Conference on Internationalisation and Quality Assurance in Hohenheim will be presented. Two main topics are investigated by an interactive process: a) impact on universities and b) facilitating student mobility. The workshop was initiated with brainstorming, followed by a compilation of key words and a presentation (Hermans 2004) of facilitating student mobility with a special emphasis on the legal framework for joint degrees.

Inherent in the co-operation of ELLS is the idea of joining forces with respect to teaching and to the development of joint curricula. As an intermediate step modules and summer schools are one option. Joint programmes require student and staff mobility; hence the facilitation of these activities is a prerequisite for successful operation.

### Challenges for institutions and students

The different groups involved – academic staff, administration (infrastructure, examination office) and students – have different needs and are affected in a different way (Table 1). The impact on universities has to be distinguished between the transition period and permanent changes, e.g. new curriculum structure following the Bologna declaration.

Table 1: Compilation of impact of stakeholders in the education system

Universities	Academic staff	Administration	Students
Bologna 1999 International offices Co-operation vs. competition Market presence Increase of competence Acknowledge time for changes <i>Extra costs?</i> <i>Incentives, investment in future</i>	Language New partners Collaboration Sharing of teaching material Expertise exchange New teaching methods Changes in thinking Cultural diversity Mobility and training <i>Extra work, incentives</i>	Language ECTS Flexibility Mutual trust International contracts  <i>Extra work</i>	Language Different environment Broaden mind/ specialising Integration International jobs Make new friends Lifelong experience  <i>Continuing education</i>
European	European	European	European

One of the major changes on university level is the introduction of so called international offices. This contributes also significantly to reduce the unhealthy competition and leads instead to more co-operation. Co-operation increases the market presence and takes into account that many environmental problems are transnational. We are all aware that a new education environment has developed globally. The strength of universities in relation to education and research is indispensable for the future competitiveness of European science in a global marketplace. ELLS may serve as a unique platform for comprising expertise in relation to environmental issues to meet in an optimal way the user demands on education, but also on research as an integral part of university, to reach market conformity and satisfy expectations of graduates and students alike (Figure 1).

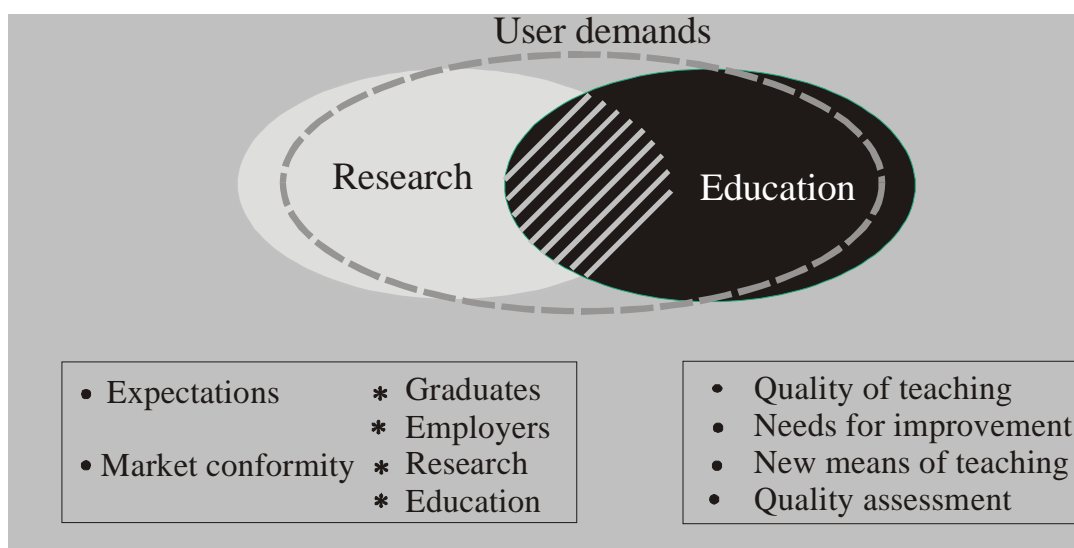


Fig.1: Relation of research, education and user demands

For the transition period enough time has to be acknowledged to ensure sustainable changes. No one likes extra costs, but they may not be avoidable in a process of developing new curricula. One key feature is considered to be the recognition of staff involvement by incentives. There is no doubt that the effort made by ELLS and the Conference on Internationalisation and Quality Assurance is an investment in the future.

For all involved persons language skills are the big challenge. For academic staff to accommodate new partnerships, to encourage sharing of teaching materials and to benefit most from new teaching methods. The administration staff has to deal with the European Credit Transfer-System (ECTS) and international contracts. Besides language a mutual trust is needed and also flexibility to find new solutions for the support of internationalisation is required. For the students language is a necessity to participate in the mobility programmes.

In general for students only positive aspects are mentionable. To study in a different environment broadens the mind, new friends may be made, it is a lifelong experience, and it offers the integration of an expertise from abroad in the home institution. The access to the international job market is supposed to be improved. Also a path to a continuous education is laid out.

The final remark is that joint curricula can be a significant contribution to the European integration.

### Facilitating student mobility

The key question is: How to encourage and facilitate students to ELLS activities? Development of full master programmes are envisaged, but as an intermediate step the development of common modules or summer courses are a valuable tool to explore new methods of collaboration.

The keywords were obtained by asking the participants of the workshop to write individually the three most important ones a distributed paper. The result is summarised in table 2.

Table 2: How to encourage students to ELLS activities?

	Keywords: Facilitating student mobility
Highest priority	<b>Financial support/housing/tuition fees</b> <b>Marketing/dissemination/information (related to ELLS in regular courses)</b> <b>Academic recognition/credit transfer/full implementation of ECTS</b>
Teaching	Novel (relevant)/challenging subject/broaden vision/extra value Quality of teaching/enthusiasm/new approaches to teach Active involvement of students/interaction/mentoring/corporate identity in ELLS/students presentations Complementarity
Administration	Well organized IROs Students as ambassadors for home university/ELLs promotion
Students	Social aspects/group experience/intercultural exp. Language experience Personal development

Not surprisingly mobility grants are ranked as highest priority. There was also a need for more marketing and dissemination of information of ELLS activities observed. For the student also very important is the full recognition of work done abroad. Student exchange simply requires the **European Credit Transfer System (ECTS)**. The ECTS has to be understood as a tool for harmonisation of different curricula and related workloads and may not be confused with a homogenisation, which would contradict the idea of pooling expertises and benefit from the specifics of partners. The characteristic that make ECTS work is (ECTS-Handbuch 1997):

- Transparency, provided by information packages and transcript of records
- Learning and programme of study agreement
- Credits, lectures (workload) have to be quantified, with respect to one academic year = 60 credits

As an example for workload harmonisation the final thesis is presented (Figure 2). Figure 2 is taken from an investigation of general information of partners of a thematic Socrates network, with 63 universities participating (Loiskandl 2003). The specific project (SP-I) "Evaluation of Teaching Resources" in a European context is part of the European Thematic Network of Education and Training "ETNET21 ENVIRONMENT-WATER" (Van der Beken 2000), sponsored by the SOC-RATES Programme of the European Commission (EC). On a master level the majority allocates 30 ECTS (equals one semester) to the final thesis.

If in a curriculum a participation in courses taught in a foreign language (technical) is compulsory a motivation and recognition to participate in a mobility programme is provided beforehand.

The other topics in table 2 are clustered in three groups, teaching, administration and student benefits. The topics in each group may be of different importance to an individual student. To perform excellent teaching, content and method, is clearly indicated. International relations offices are key players in facilitating student mobility, but also students have a role as ambassadors for the home universities. This is a very valuable source for information exchange on an informal level.

The social aspects mentioned are in accordance with the impact analysed in table 1. Highlighted may be once more student mobility as part of the personal development.

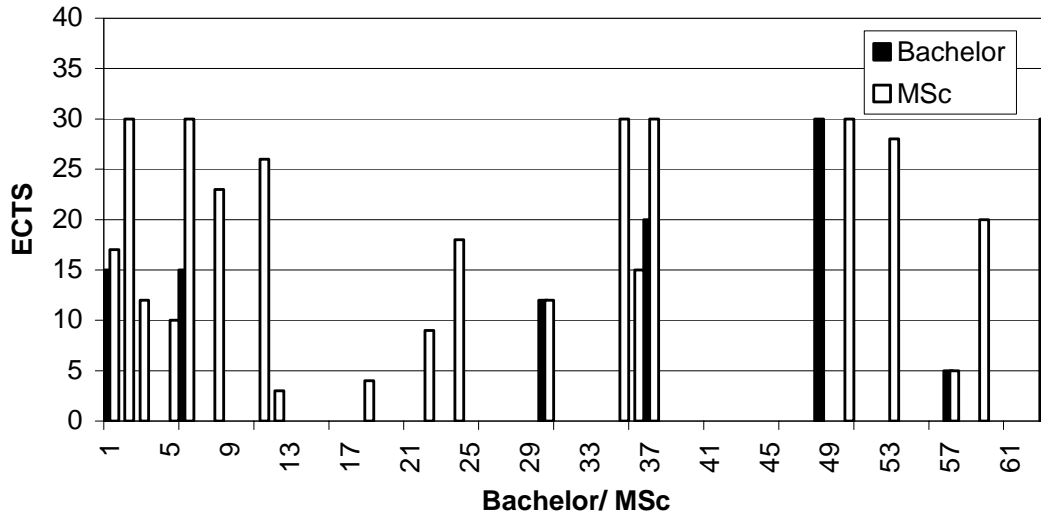


Fig. 2: ECTS allocation of final thesis in a European context.

### Legal framework for joint degrees

The following chapter follows the discussion of the international relations officers (IRO) group. Of course on a master level students have to fulfil the requirements for obtaining a Master of Science degree or equivalent diploma for a specific ELLS programme at each of the participating institutions.

It is very important to ensure that the joint curricula fit to the various national legal systems of the participating institutions. In the EU 'Trends report 2003' it is noted that the legislation in the various nations does not yet allow the awarding of joint degrees. This is not very encouraging and points out the need for a clear check of the legal framework, especially of the countries of ELLS partners. Within this framework the question how ELLS treats this problem and what is the ambition of ELLS has to be answered.

Table 3: Comparison of joint degree solutions

Minimum solution	Maximum solution
One institution awards the degree	Double/multiple degree
The diploma supplement states	The diploma supplement states
- the joint degree programme	- joint degree programme
- the participating universities	- participating universities

The minimal solution might be satisfactory in terms of a home university and host (partner-) universities. This solution probably is not working successfully in terms of jointly attracting outside students to a joint degree programme. It might be financially satisfactory if the flow of students is balanced in numbers.

The maximal solution may be considered as unfair or even ridiculous in the sense that a student gets more than one degree for the same amount of work. Why would we want to award a double/multiple degree? Within the limitations of the various legal frameworks the student actually receives what was promised: a degree that is legally validated in each of the participating countries and that allows him or her to find a position in the country of each of the participating universities. There is also a different appearance of the programme in two ways:

- Externally: It recognises the joint effort in terms of state/public funding functions for all.
- Internally: It provides a basis for funding of the professors/departments/teachers involved.



Besides the legal structure a work definition for a joint ELLS degree program was discussed (Table 4). This should provide a framework to establish comparable programmes and to ensure transparency.

Table 4: Work definition for a joint ELLS degree programme

<b>Keystones and actions</b>
<ul style="list-style-type: none"> <li>- Developed by at least two ELLS institutions</li> <li>- 120 ECTS</li> <li>- English – provide facilities for local language and culture learning</li> <li>- Tailor-made and flexible</li> <li>- Minimum of 30 ECTS – maximum of 60 ECTS at one institution</li> <li>- Prerequisites for enrolment jointly defined</li> <li>- Joint thesis supervision of at least 2 ELLS institutions</li> <li>- Full mutual recognition</li> </ul>

The IROs are asked to find the pieces of this puzzle, by compiling the various ‘in-state’ rules, regulations procedures and attitudes. Another task is to uncover obstacles and to find openings for solutions. This includes dealing with academic, legal and economic issues as well:

- Intra-university: Defining a joint working model for joint ELLS degree programmes and conditions for implementation satisfactory to all
- External: Entering the ongoing policy debate at national and EU level to forward the joint European degree awarding

## **Conclusions**

All participants of the workshop are very positive to internationalisation and are prepared to support ELLS activities. Of course incentives are appreciated and will increase the output. There was a feeling that a list of added values is needed.

Students are ready to go abroad. Now we need to facilitate them, by an appropriate information transfer, transparent and flexible curricula and last but not least by a financial support.

Besides legal constrains a joint degree is considered as very important, hence any activity to change European laws should be actively supported.

## **Acknowledgement**

The author is very grateful to the participants of the workshop for the fruitful discussions and the various inputs. Especially thanks are expressed to Jeanine Hermans for her presentation on behalf of the IROs group.

## **References**

- VAN DER BEKEN A.: ETNET website <http://etnet.vub.ac.be>, Vrije Universiteit Brussel, 2000.
- HERMANS J.: Towards Joint ELLS Degrees, Summary of IRO discussion on facilitating student mobility, 2004.
- LOISKANDL W.: Final report SPI teaching resources, Universität für Bodenkultur, Wien, 2003
- Joint declaration of the European Ministers of Education convened in Bologna on the 19<sup>th</sup> of June 1999.
- ECTS-Handbuch, Europäische Kommission: Europäisches System zur Anrechnung von Studienleistungen, 1997



## **Proposal for a Joint Educational M.Sc. Programme in Horticulture within the Euro League for Life Sciences**

ROLF LARSEN

SLU, Dept. of Crop Science, SE-230 53 Alnarp, Sweden, Rolf.Larsen@vv.slu.se

### **The Need of Education in Horticultural Science**

Throughout the academic world, horticulture is considered a small topic and the availability of high level competence within horticultural science at national levels is limited. During the last ten years the general trend in Northern Europe has been that the number of students recruited to horticultural science has been decreasing. The reasons for this development might be many, but horticultural science is competing for students with other academic areas and topics that today seem to be far more attractive. At the same time the horticultural industry in North Western Europe is today in a phase of strong structural change. This is most noticeable within protected cultivation in the Netherlands where computerisation and automation is rapidly being implemented throughout the industry and where environmental issues have forced a development towards closed production systems. In Scandinavia, there is a parallel trend where the glasshouse operations are getting fewer, but those that are surviving are getting larger, more industrialised, specialised and rational.

The need of the industry is in much dictated by the market. The European market for horticultural products is today dominated by a few very large trans-European retailers. To compete on the demanding market, high quality standards have to be met, and there is an ongoing need of information within the industry concerning the relationship between the production process, post harvest handling and produce quality. From consumers and society at large there are also the issues of food security and traceability, demand for functional food, together with the impact of horticultural production on the environment. All this indicates a future need of highly qualified and specialised experts within the horticultural industry in North Western Europe. However, due to its relative size the demand for experts within the industry will be limited.

Although the number of students interested in horticultural science is decreasing, the public interest in horticulture in general seems to be steadily increasing. However, the main interest is in issues e.g. healthy food, interior decoration, gardening and recreation and not so much in the industrialised horticultural production. The demand for information concerning these issues is high, which is reflected in an increasing number of books, magazines and TV programmes dealing with the topics. The need of journalistic and advisory expertise within the public sector and society at large should therefore not be under-estimated.

To summarise, the indications are that there will be a continuing need for horticultural expertise in our future society in Northern Europe, but the demands from the industry and society will become increasingly versified with an emphasis on competence and high level of specialisation. If higher horticultural education is to survive, the traditional focus on horticultural production will therefore have to be changed.

### **The Need of European Cooperation within Horticultural Education**

For reasons of funding, national institutes dealing with research and education in horticultural science are today forced to focus on a few areas of competence that are closely related to the national industry, where they can develop groups with a high level of scientific expertise. At a national level

we are therefore getting a more specialised expertise, but losing overall horticultural knowledge. As a result, it is becoming increasingly difficult for a single university to give courses covering all aspects of horticultural science. The trend in teaching is therefore to become “more academic”, to focus on mechanisms and general relationships that are related to ongoing national research projects, more than on analysing the technicalities of the production systems and practicalities of the handling of the produce. This is done at the risk of losing touch with the many applied problems of the industry and society, and also of making the education less attractive to young students who wish to have a scientific base linked to good general knowledge in horticulture. This focuses on two issues, the need to cooperate above the national level, and the need to re-vitalise the horticultural education without losing the links between science and applied reality. If we wish to be able to give the kind of academic education needed for the future, then we must cooperate at a European level within higher education in horticulture so that we can use all available expertise in the best way possible.

### **Possible Actions**

There are a number of options for implementing a joint horticultural educational effort within the Euro League (ELLS). An important question is at which academic level the cooperation should be. The parties involved in the ELLS have different structures for their educational degrees. However, most likely all have an introductory part consisting of compulsory courses at B.Sc. level. There is no need to include this part in a joint curriculum. The suggestion is that the cooperation focuses on elective courses in horticulture at M.Sc. and advanced B.Sc. levels.

In the proposal we can identify the following possible levels of cooperation:

- 1 Give priority to current elective courses (given in English) within the ELLS that can be accepted as part of the national B.Sc., M.Sc. or equivalent degree in horticulture/agriculture by all ELLS members.
- 2 Teacher involvement and mobility within the ELLS in relation to the courses accepted under item 1).
- 3 Development of joint short-term study programmes in accordance to the Erasmus Intensive Programme (IP) policy.
- 4 Defining areas/topics where new courses in horticulture should be developed and the implementation of these courses.
- 5 Defining a joint M.Sc. degree in horticulture for the ELLS.

At this stage we wish to focus on items 1) through 3). This part is important since it makes it possible for us to relatively quickly apply for support both from the new Erasmus Mundus programme (support for recruiting students from “third country”) and for an Erasmus IP. If these steps are successful, then the work should continue at a later stage with 4). Item 5) is an interesting and ambitious option. However, at this early stage we feel that it should be spared for the future. A more detailed action plan and timetable for 1) through 3) is presented further on in the proposal.

### **The ELLS Proposal in Relation to Other European Parties**

Apart from the suggested Euro League proposal, there are other similar networks aiming at merging higher education in horticulture. A very ambitious project has been initiated by Technische Universität München, involving other universities from the EU and New Zealand in an international M.Sc. degree in horticulture. Another network, the EuroHort, which is a direct result of the intensive programme Chains-IT funded through Socrates, is in the act of being formed. The EuroHort and Chains-IT include the Euro League partners of Wageningen, KVL and SLU, together with six other horticultural departments at European universities. The other departments of this network belong to the universities of Ecole Supérieure d’Agriculture (INH) in Anger, in France, Université Catholique

de Louvain in Belgium, University of Hanover in Germany, University of Helsinki in Finland, UTAD of Vila Real in Portugal and Warsaw Agricultural University in Poland. All of these universities have horticulture on their curriculum and have high competence in vital topics of horticulture. Within the EuroHort network it is possible to cover the most important aspects of horticulture from protected cultivation, production of field crops and pomology, to viticulture and oenology.

It is important that a horticultural effort within the ELLS does not exclude the possibility of including other vital partners. However, at this stage it might be wise to first focus on making an agreement within the ELLS and then linking this to other parties of interest. An interesting possibility is the formation of a Thematic Network in Horticulture within the Socrates programme.

### **Suggested Action Plan**

#### **1 *Defining and accepting joint courses as a part of the national degrees (start spring 2004, finished by autumn of 2004).***

Actions:

- Define strengths and weaknesses within horticultural teaching and at the local ELLS environments.
- Verify all courses in horticulture given within the ELLS.
- Determine the number of potential students and the number actually taking courses.
- Determine areas where joint support from the ELLS might be needed.
- Give priority to courses that could be considered as joint courses within the ELLS. These courses should preferably be given in English. They should also automatically be qualified as part of the national B.Sc. or M.Sc. degree. It is also within these courses that we should focus the promotion of teacher and student mobility.
- Apply for funding through Erasmus Mundus for third country students, if possible.

#### **2 *Teacher involvement and mobility (start autumn of 2004, finished by beginning of 2005).***

Actions:

- Define teachers and researchers that are available for teaching in different subjects within the ELLS. This is to some part done under item 1).
- Investigate how they can be involved in the joint courses that have been accepted (item 1).
- Define the potential number of students that might be interested in studying at other ELLS universities.

#### **3 *Short Term Study Programmes (start autumn of 2004, finished by start of 2005)***

Actions:

- Define one or two topics that are of special interest as short-term study programmes (IP).
- Submit an application from Erasmus/Socrates during 2005.

#### **4 *Defining areas/topics for new courses in horticulture (start of 2005 and continuing).***

Actions:

- Define areas/topics where new more permanent courses are needed.
- Decide how and where to run these courses.

If the process of implementing items 1 through 3 goes well, we have the possibility of starting the process earlier than 2005.

### **Proposed Timetable**

#### **1 *Introductory meeting – winter/spring 2004***

Initiate collection of information needed for items 1) and 2).

Collected material is compiled during the spring and should be distributed during the summer of 2004. Ideas concerning items 2) and 3) are developed.

#### **2 *Meeting 2 – late summer/autumn 2004***

The compiled material is discussed and a conclusion is reached concerning courses and joint topics of priority.

The work concerning teacher involvement in joint courses is initiated (item 2).

The work concerning short courses is initiated, and interesting topics are defined (item 3).

After the meeting, work concerning proposal/proposals is initiated (item 3).

3 ***Meeting 3 – spring 2005***

Planning of short courses is initiated.

The continuing work within the group is planned (initiation of item 4).

## **Subject Area: Plant and Crop Science**

ANJA G.J. KUIPERS

Wageningen University and Research Centre, P.O. Box 386, NL-6700 AJ Wageningen, The Netherlands, anja.kuipers@wur.nl

### **Subject Area members:**

Present at the conference:

- UHOH: Prof. Dr. Michael Kruse, Seed Science and Technology
- WUR: Dr. Anja G.J. Kuipers, B.Sc. & M.Sc. Co-ordinator Plant Sciences and Plant Biotechnology

Others:

- BOKU: Prof. Dr. Hans-Peter Kaul, Institute of Agronomy and Plant Breeding (IPP)
- KVL: Prof. Dr. Jens C. Streibig, Dept. Of Agricultural Sciences (Weed Science)
- SLU: Dr. Jannie Hagman, Ecology and Crop Production Science

### **History**

In the ELLS Subject Area Plant and Crop Sciences so far no activities have been planned. The first meeting of this Subject Area on the 16<sup>th</sup> February at Hohenheim, was attended only by Michael Kruse (UHOH) and Anja Kuipers (WUR). Within our universities, we both recently took over the ELLS Plant and Crop Sciences membership. Hans-Peter Kaul (BOKU) also recently took over the ELLS Plant and Crop Sciences membership. He is interested in participating in the Subject Area. So far, no reaction has been received from the KVL- and SLU-representatives. Their interest in or commitment with the Subject Area Plant and Crop Sciences remains unclear.

Our meeting mainly consisted of a mutual acquaintance with each other's B.Sc. and M.Sc. programmes, specialisations and courses. We also discussed the pros and cons of teaching in English, and the schedule of the academic year at UHOH and WUR.

### **B.Sc.- and M.Sc.-programmes at UHOH, Faculty of Agricultural Sciences that relate with the Subject Area Plant and Crop Sciences:**

- B.Sc. Agricultural Sciences;  
Specialisations: Agricultural Economics, Agricultural Engineering, Animal Sciences, Crop Sciences, Soil Sciences
- M.Sc. Crop Sciences  
Specialisations: Yield Physiology and -Management, Plant Breeding, Plant Pathology, Seed science

### **B.Sc.- and M.Sc.-programmes at WUR that relate with the Subject Area Plant and Crop Sciences:**

- B.Sc. Plant Sciences  
Specialisations: Crop Science, Greenhouse Horticulture, Organic Plant Production, Plant Breeding and Genetic Resources, Plant Pathology and Entomology

- B.Sc. Biological Production Science
- M.Sc. Plant Biotechnology  
Specialisations: Functional Plant Genomics, Molecular Farming, Molecular Plant Breeding, Plant Pathology and Pest Control
- M.Sc. Plant Sciences  
Specialisations: Crop Science, Greenhouse Horticulture, Organic Plant Production, Plant Breeding and Genetic Resources, Plant Pathology and Entomology
- M.Sc. Organic Agriculture  
Specialisations: Farm and Rural Environment, Consumer and Market

### **Teaching in English**

- All M.Sc.-programmes at WUR are taught in English. At B.Sc.-level, teaching in the first year is in Dutch, whereas the number of courses that are taught in English increases gradually in year 2 and year 3. Due to the large amount of students from abroad, especially in the M.Sc.-programmes Plant Sciences and Plant Biotechnology, studying at WUR has a strong international focus.
- At UHOH, several of the M.Sc.-programmes are taught fully in English. Teaching at B.Sc.-level is in German. A decision on how to increase the amount of courses in English has to be taken at faculty level. The international focus of students depends on the B.Sc./M.Sc.-programme that they are taking.

### **The academic year**

- UHOH has a two-semester system. The winter semester starts in week 42 and ends in week 6, followed by an examination period of three weeks (mid-October until end of February). The summer semester starts in week 14 and ends in week 27, also followed by an examination period of three weeks (beginning of April until end of July).
- WUR has a five-period system: period 1 = September + October; period 2 = November + December; period 3 = January + February; period 4 = March + April; period 5 = May + June. Each period consists of 6 weeks teaching, 1 week self study, 1 week examination.

### **ELLS Co-operation:**

Within the ELLS-framework several levels of co-operation between the participating universities can be envisaged:

- 1 Mutual recognition of existing courses in the Subject Area, aimed at stimulating student exchange (e.g. Erasmus-Socrates)
- 2 Development of joint courses (e.g. summer schools) with several ELLS and/or non-ELLS partners
- 3 Development of joint curricula, leading to a double or joint degree
- 4 We decided to make a start with step 1 and are planning to set up a database with advanced courses (third year B.Sc. or M.Sc.-courses) in the Subject Area Plant and Crop Science that are available in English at each of the ELLS universities. From this list, "semester-packages" of series of related courses could be composed that facilitate student exchange. In addition we plan to set up an overview of M.Sc.-thesis subjects, also aimed at student exchange.

This inventory of courses and thesis subjects should lead to the determination of shared and complementary specialisations at each ELLS-university. Hans-Peter Kaul (BOKU) has expressed his interest in participating in setting up this database.



With regard to step 2 we came to the conclusion that the current working pressure on teachers at UHOH and WUR leaves little space for the development of joint courses at this moment. This vision is confirmed by BOKU, with a few suggestions for future summer courses with added value.

The development of joint curricula may be something for the future. A lot is unclear with respect to the legal status of joint and double degrees, and what is the added value of such a degree as compared to a WUR- or UHOH M.Sc.-degree? Basically, the B.Sc./M.Sc.-structure was implemented to introduce an internationally recognised M.Sc.-degree that should give admission to the global job market. Joint curricula may be interesting if they yield extra money (e.g. from the EU: the Erasmus Mundus programme [http://europa.eu.int/comm/education/programmes/mundus/index\\_en.html](http://europa.eu.int/comm/education/programmes/mundus/index_en.html)) or as a solution to cope with reducing student numbers in a specific specialisation.

In this respect, a co-operation in the area of Organic Agriculture (WUR; small M.Sc.-programme)/ Organic Farming (UHOH; to be set up) might be a fruitful initiative.

### **Future**

Finally, we discussed about the future of the Subject Area Plant and Crop Science. It is a very broad area, from gene to ecosystem that needs further specification and sharper definition of topics for co-operation. We see possibilities for co-operation in the field of Plant Breeding and Seed Science, and would like to know more about the interests at the other ELLS partner universities. A vision on the future of Plant and Crop Sciences and its sub-areas has to be developed to identify areas and topics where European and/or global co-operation will be most fruitful.



Euro League for Life Sciences  
Conference on Internationalisation and Quality Assurance  
University of Hohenheim, 16–17 February 2004

## **Subject Area: Plant Breeding and Seed Science**

MICHAEL KRUSE

Institute of Plant Breeding, Seed Science and Population Genetics (350), University of Hohenheim,  
70593 Stuttgart, Germany, mkruse@uni-hohenheim.de

### **Subject Area members up to now:**

Dr. Anja G.J. Kuipers, BSc & MSc Co-ordinator Plant Sciences and Plant Biotechnology  
Wageningen University and Research Centre

### **History**

The idea to start this Subject Area was born in Hohenheim a few weeks before the Conference on Internationalisation and Quality Assurance. The coordinator of the Subject Area “Plant and Crop Science” Dr. A. Kuipers was contacted since “Plant Breeding and Seed Science” is clearly a part of “Plant and Crop Science”. During the further discussion the strategy was developed to start ELLS in the plant and crop science area with a Subject Area that is more specific. Plant Breeding and Seed Science was seen as a good topic since the scope of this area can be defined clearly within plant and crop science and there are already centres of competence for Plant Breeding and Seed Science in the ELLS member universities in place or planned that have different directions. A circular to the member Universities asking for support to this idea was not very successful. But during the conference participation of others than WUR and HOH was indicated.

### **Activities**

In the ELLS Subject Area Plant Breeding and Seed Science so far no activities have been planned. Since lectures in HOH in Plant Breeding and Seed Science are taught mainly in German, there will be a general decision necessary at faculty level about the importance of ELLS for the further development of teaching and the willingness to adjust the teaching structure including language to an ELLS friendly system. This discussion on a UHOH faculty level was initiated as a direct conclusion of the Conference on Internationalisation and Quality Assurance. Decisions are not yet done. For details about the discussions during the Conference on Internationalisation and Quality Assurance see report of the Subject Area “Plant and Crop Science”.



## **ELLS Subject Area Animal Sciences – Activities up to now**

RENE KWAKKEL

Wageningen University, P.O. Box 338, Marijkeweg 40, NL-6700 AH Wageningen, The Netherlands, rene.kwakkel@wur.nl

### **Introduction**

At all partner universities the agricultural discipline as a whole is under pressure, forcing reduction of budgets and processes of internal restructuring of sections, institutes and departments. An overall tendency is a separation in sectors of basic research on the one side with focus on biotechnology, and on the other side of applied research, integrating topics of animal production and health, of organic farming and/or sustainable agricultural systems.

### **Participants**

Birgitta Malmfors (SLU), Wilhelm Knaus (BOKU), Anne Valle Zárate and Johannes Steidle (UHOH, joint-coordinators), Poul Henning Petersen (KVL), René Kwakkel (WUR, joint-coordinator) and Hugh Galbraith (University of Aberdeen AU; on an informal basis).

### **Meetings**

Since the start of the Euro League, later transformed into ELLS, our group or Subject Area has been together 3 times. Two meetings took place in Amsterdam, The Netherlands, at Schiphol Airport (November, 14<sup>th</sup>, 2002 and November, 7<sup>th</sup>, 2003) and the last meeting was in Hohenheim, Germany (February, 16<sup>th</sup>, 2004). At the moment we are preparing a meeting in Copenhagen for the autumn period.

As in all committees, the first aim was to get to know each other. If a group succeeds in this aspect (the ‘we’-feeling) it is much easier for each participant to draw the attention to each members’ responsibility. We are at that stage now. The second meeting in Amsterdam has been used to identify certain areas in which we could start with proper collaboration. These will be mentioned below.

### **Activities**

At first, questionnaires were distributed and collected among the members concerning the list of degrees and subject areas. The areas fall into four groups: general biology, livestock production/management systems, animal sciences, and specialisms. Differences in the concept of undergraduate versus postgraduate studies exist between the universities, however, this is not considered a serious obstacle for cooperation.

Exchange of students is an essential element in a cooperative programme. For the so-called national core/base semester courses the attention of students from other ELLS universities will probably be more or less limited. The same will probably be the case for 6-8 week block courses (SLU and WUR), because they do not fit into the home university semester programmes in other countries. Summer courses, thematic full time semester courses and semester packages seem to be much more feasible in an exchange program.

Exchange of staff for teaching of course elements should be considered in all forms of courses.

Besides mutual information about changes/priorities in the existing lecture programmes, a general discussion on pros and cons of joint actions within the ELLS and pros and cons of opening actions for non-members was carried out.

- WUR and UHOH are expanding their already existing offers of blocked modules in English on Master/PhD-level and want to incorporate joint actions on this line.
- SLU has recently established an internal PhD course on multifunctional organic animal husbandry and a course in English on animal science in general for students from non-animal courses.
- BOKU is setting up first courses in English, mentioning one on organic farming with an animal science component.
- KVL is going to implement a block-structure by 2005 and envisaging transition to all English courses by 2007 with increasing contents from veterinary sciences.

Concentrating on mutual interest, a general restriction of courses for ELLS members should be avoided, and also arguments arise to link ELLS-courses to other networks, where partners have already commitments. Approaches of distance learning are favoured by AU and KVL, however substantial additional labour input might be needed to work out new common property teaching material and reservations to provide individual property to a public domain.

The following list of areas of collaboration was identified:

- General course material upgrading
- ICT-based courses for exchange
- Identification of specific modules for student and staff exchange

The following actions have been identified for specific immediate actions with clear responsibilities in a specific timeframe:

- 1 **UHOH** would organise a 3 weeks summer school in July 2004 on the topic “Pathogen-Host-Interaction” in a multidisciplinary approach.
- 2 **KVL** would offer as an ELLS-activity a 14 weeks full-time course for master students on the topic “Experimental Animal Physiology and Nutrition”, which has been implemented in 2002.
- 3 **SLU** might be interested to participate in organising a module on “Livestock in Organic Farming”, where components of a distance learning programme from AU and lecture material from BOKU might be incorporated.
- 4 **WUR** would offer an international master programme on “Poultry Science” within ELLS of 1.5 - 2 years duration, starting with basic courses in September 2004 and continuing with special courses in September 2005 in connection with jointly supervised thesis works and comprising lecturer exchange.
- 5 **SLU** would eventually be interested in setting up a course offer in “Equine Sciences” or “Companion Animals”, which would also find support from WUR and from AU.
- 6 **BOKU** might be interested to participate in organising the task of implementing a data base for thesis topics to be jointly supervised, support would be given from WUR and KVL.

This is the status of our activities. There is monthly e-mail contact among the partners.

## **Summer School: Pathogens, Parasites and their Hosts - Ecology, Molecular Interactions and Evolution -**

UTE MACKENSTEDT<sup>1</sup>, JOHANNES STEIDLE<sup>1\*</sup>

Institute for Zoology, University of Hohenheim, D-70593 Stuttgart, Germany,  
mackenst@uni-hohenheim.de, jsteidle@uni-hohenheim.de

\* Corresponding author

### **Scope**

The Summer School: Pathogens, Parasites and their Hosts - Ecology, Molecular interactions and Evolution - is organised within the ELLS Subject Area Animal Science.

### **Course objectives**

Pathogen-host interactions are a major focus in the work of several institutes at the University of Hohenheim. In a joint initiative of the Faculties of Agricultural Sciences and Natural Sciences, host-pathogen interactions will be the subject of a 3-week summer school 19 July - 6 August, 2004. The summer school will introduce the ecology, molecular interactions, and evolution of pathogen-host relationships with respect to animals, plants, and microorganisms. These topics will be addressed in lectures, laboratory experiments, and excursions. Following an integrative approach, the aim of the summer school will be a comparison of different biological systems, showing both striking similarities and surprising peculiarities.

### **Topics**

#### ***How pathogens meet their hosts***

- Behavioural mechanisms
- Chemical and physical recognition
- Life cycles and zoonoses
- Mechanisms of invasion

#### ***Host resistance***

- Host resistance in plants
- Secondary plant compounds
- Innate immunity
- Inflammation

#### ***How to overcome host defence***

- Immune suppression
- Antigenic variation
- Molecular mimicry
- Toxins

#### ***Coevolution***

- Adaptation between host and pathogen
- Resistance genes in plants and animals
- Breeding for resistance in plants and animals
- Multitrophic level interactions

### **Contributing institutes**

- Animal Husbandry and Breeding
- Animal Nutrition
- Animal Production in the Tropics and Subtropics
- Biological Chemistry and Nutrition
- Environmental and Animal Hygiene
- Genetics: Dept. General Virology
- Microbiology
- Phytomedicine: Dept. Applied Entomology
- Plant Physiology and Biotechnology
- Zoology: Depts. Animal Ecology, Parasitology
- Life Science Centre

The participating institutes are members of the Faculty of Agricultural Sciences and of the Faculty of Natural Sciences at the University of Hohenheim.

### **Participants**

The course is aimed at students of biology and agricultural sciences or related subjects who have already passed university elementary courses of at least 2 years. The maximal number of participants is 20.

### **Location and date**

University of Hohenheim, Stuttgart, Germany, **19 July – 6 August, 2004**

For further information and application please contact the ELLS website:

<http://www.euroleague-study.org/programs>.



## Biosystems Engineering

SIMON BLACKMORE<sup>1</sup> AND THOMAS JUNGBLUTH<sup>2\*</sup>

<sup>1</sup> The Royal Veterinary and Agricultural University, AgroTechnology, Hoejbakkegaards Alle 2, DK-2630 Taastrup, Denmark, sib@kvl.dk

<sup>2</sup> Institute for Agricultural Engineering (440), University of Hohenheim, Garbenstrasse 9, D-70593 Stuttgart, Germany, jungblut@uni-hohenheim.de

\* Corresponding author

### Mandate for the Subject Area “Biosystems Engineering”

The *aim* of the ELLS is to develop a network of quality universities in the field of Natural Resources Management, Environmental Sciences and Life Sciences. This network should strengthen each partner university's position and capability through sharing expertise and costs in the development and delivery of their degree programs, and explore cooperation with other consortia in higher education.

The backbone for ELLS are the Subject Areas, within Biosystems Engineering, Prof. Simon Blackmore, KVL, Denmark has been appointed to lead the Subject Area (SA) for Biosystems Engineering, from this point forward referred to as BELLS.

### Structure of SA “Biosystems Engineering”

BELLS consists of the persons mentioned below. Please note that BELLS on top of the five ELLS institutions also includes Katholieke Universiteit Leuven. Unfortunately was the initiation meeting of BELLS situated in the examination period; hence no representatives from ELSA were present.

- Christer Nilsson, SLU
- Herbert Weingartmann, BOKU
- Thomas Jungbluth, UHOH
- Simon Blackmore, KVL
- Jan Willem Hofstee, WUR
- Josse De Baerdemaeker, Katholieke Universiteit Leuven

### Aims

The BELLS steering group has identified a number of issues that will be specifically targeted in the process of revitalising the area of Biosystems Engineering within Europe. Moreover, a number of objectives have been identified in order to reach the aim:

- To build up the image of the Biosystems Engineering within the ELLS
- To raise the awareness of the area of Biosystems Engineering on the participating universities, specifically targeting students and colleagues
- To attract more students to the area of Biosystems Engineering through a collaborative marketing campaign
- To promote graduates through collaboration with international companies and research stations from Europe

## Tasks to be carried out in BELLS

To catalyse the process of reaching the aims of BELLS following activities have been planned:

- Planning, formulating and setting up a summer short course within Biosystems Engineering – *The BELLS Summer Short course*. The course will give the students an introduction to the diversity within the sphere of Biosystems Engineering in the six member countries. The BELLS steering group plans on applying for SOCRATES funds for *preparatory visits* and Intensive Programmes.
- The BELLS steering group will raise the profile of the area of Biosystems Engineering within BELLS by formulating a certificate. This certificate will prove that the student, at least, have undertaken following activities:
  - 1 The BELLS Summer University course
  - 2 At least 60 ECTS from the BELLS course list
  - 3 30 ECTS from one of the other member universities

BELLS certificate can be used as an amendment to the national diplomas and will then prove that the students have undertaken activities under BELLS.

- BELLS will formulate common marketing material, where the focus is laid on the opportunities within BELLS and less focus is put on the specific topics taught.
- BELLS would like to have a sub page on the BELLS homepage, where information on the BELLS organisation, the BELLS summer university course, the BELLS certificate etc. will be presented.

## Timeline

In the process of ensuring that BELLS is a forward moving organisation, the below action plan will be outlining the work to be undertaken within BELLS the coming year or so. The action plan will be a “living” document that continuously will be developed according to the progress and achievements reached.

Time	Action	Output
January 2004	Initiating meeting for BELLS	Green Paper
Ultimo February 2004	Description of summer course	Outline of course curricula
18 <sup>th</sup> of March 2004	Submit SOCRATES application for general activities of observation, analysis and innovation	Application
May/June	Submit application for preparatory visits	Application
June 2004	BELLS steering group meeting	White paper
Autumn 2004/spring 2005	Launch marketing campaign and homepage	
1 <sup>st</sup> of March 2005	Submit SOCRATES Intensive Programme application	Application
April 2005	Deadline for students' application to BELLS summer course	
August 2005	BELLS summer course running for the first time	

## **Minutes of the First Meeting of Representatives for New Subject Area “Biostatistics/Bioinformatics” within the Euro League for Life Sciences**

HANS-PETER PIEPHO

University of Hohenheim, Crop Production and Grassland Research (340), D-70593 Stuttgart, Germany, piepho@uni-hohenheim.de

### **Participants:**

- Hans-Peter Piepho (UHOH)
- Per Brockhoff (KVL)
- Dietrich von Rosen (SLU)
- Peter Finke (WUR)
- Hubert Hasenauer (BOKU) has only recently been appointed, so it was too late for his participation

### **Expected profile of student wanting to take a course in biostatistics/bioinformatics**

Biostatistics/Bioinformatics is a key discipline in the Life Sciences, providing modern tools for analysis and modelling of biological data and processes. Knowledge in this field is a key skill in many areas of research. While students in the Life Sciences should obtain a thorough training in Biostatistics/Bioinformatics, they will seldom choose these fields as their major subject. Development of a subject area in Biostatistics/Bioinformatics needs to account for this type of demand.

The group discussed the profile of a typical student expected to take a course in Biostatistics/Bioinformatics within the Euro League. The profile can be summarised as follows:

The student

- does not hold a degree in statistics
- does not intend to achieve a degree in statistics
- has had one, preferably two courses in statistics (approx. 6 ECTS each)
- wants additional, specialised courses related to his/her main field of interest
- Two profiles:
  - 1 Student mainly interested in his/her field of application, interested in additional training
  - 2 Student interested primarily in Biostatistics/Bioinformatics, wanting to take several courses simultaneously. Very few such students expected each year

### **Joint Master programme**

Due to the expected profile of a typical ELLS student we see no demand for a full Master programme in Biostatistics/Bioinformatics.

### **Existing courses to be offered within ELLS**

The group has identified the following courses, which may be offered within ELLS (see Table 1). Mutual recognition of the courses is expected to be no problem. We will approach the rectors/presidents and request that courses identified by the SA will be recognised in the relevant

curricula with minimal administrative obstacles. If this is granted, the SA will take further steps to get the courses mutually recognised. Meanwhile, recognition will be dealt with on an individual basis, after a student has expressed interest in a specific course.

The courses UHOH2 and KVL1 both focus on mixed models and are regarded as exchangeable (refer to Table 1 for acronyms). WUR1 shows some overlap with these two courses, but offers some additional material, while mixed models are dealt with in a more condensed manner. The other courses in Table 1 are more specialised and show little or no overlap.

The courses KVL1 and KVL3 are entirely internet-based. Per Brockhoff presented to the group some of the web pages of KVL1 and illustrated the internet facilities. The courses can be taken from students of partner universities without the need to spend time at KVL, except for the first day. The group discussed that net-based courses of KVL are a very promising model for courses to be offered within the Euro League.

KVL is involved in a “Master in Applied Statistics”, which is organised by 4 partner universities in Denmark and comprises 8 courses (6 ECTS each). The MAS is targeted at non-statisticians in the life sciences with at least two years of working experience. The tuition fee is 20,000 EUR. Since this is a joint activity by several partners, the tuition cannot be waived, and thus, the MAS is not available for Euro League. However, the courses KVL1 and KVL2, which can be offered to ELLS students, are equivalent to two of the eight courses taught within the MAS.

WUR may be able to open the course “Numerical analysis of ecological data” for Euro League. Peter Finke has asked the WUR ELLS-coordinator Fons Werrij how to get this course into the curriculum so that it can be accessible. He replied that he found the idea attractive and would look into it before the Hohenheim meeting. He also suggested that we formulate the wish to have an ELLS-course on Numerical analysis of ecological data as a proposal to the board at the Hohenheim meeting.

SLU: At this stage we can in principle open all courses which we teach but since there is a huge overlap with courses at other universities we list three which as far as we know can have some special flavour. Courses: (1) System analysis, model building and simulations (introductory in system analysis course given for Ph.D. students); (2) Discrete structure for bioinformatics (here an interest for mathematics is needed, joint course with Uppsala University); (3) Experimental design (classical course on analysis of variance and experimental design, the level is above the introductory one).

BOKU can offer five courses for the SA.

### **Differences in semester plans**

Co-ordination of joint study programs is hampered by differences in semester plans.

**KVL:** will have 4 blocks of 9 weeks. Net-based courses not affected by this schedule. Now (until summer 2005): 2 semesters starting 1 Sept. and 1 Feb. Duration: 14 weeks each followed by (up to) 3 weeks of exams AND then followed each by two additional 3-weeks periods of teaching intensive courses. Starting 1 Sept. 2005: 4 blocks of 9 weeks, where exams are included. Block 1 starts 1. Sep., Block 3 starts 1 Feb. (one week break between blocks).

**WUR:** 5 blocks of 8 to 9 weeks. (period 1: weeks 1-8; period 2: weeks 9-16; period 3: weeks 18-25; period 4: weeks 26-33; period 5: weeks 34-44)

**SLU:** 2 semesters, 20 weeks each, each semester split into 2 blocks (10 weeks each). So there is a total of 4 blocks. Fall semester starts in the very beginning of September and ends in January where the spring semester starts which proceeds until June. Blocks start in the beginning of semesters as well as at the beginning of November and at the end of March. However SLU runs courses which do not follow this structure, for example, they can run over the whole semester with a lower intensity.

**UHOH:** 2 semesters per year, 14 weeks each. Summer: mid April to mid July. Winter: mid October – mid February. Courses usually extend across the full 14 weeks. Some courses are blocked.

**BOKU:** 2 semesters per year, 14 weeks each. The winter semester starts in October until January. February they have three weeks off. The summer semester starts end of February until end of June. There is no teaching from July to September.

The representatives of the subject area (SA) think that lack of synchronisation is a major problem for joint study programs, but feel that the SAs can do little to overcome this problem, which affects all SAs. In case new courses are developed, they can be scheduled so that overlap with other courses is minimised.

### **Master theses at partner university**

We suggest that each university provides a short description of research interests by scientists in Biostatistics/Bioinformatics. The profile need not be exhaustive, i.e. it is sufficient that some hot topics are listed which are of current interest. The description may be set up on the internet for M.Sc. students to identify topics for their master thesis. Students can then contact co-ordinator of SA, who will establish contact with partner university. Partner university, in turn, will identify scientist willing to supervise an M.Sc. thesis. At least formally, supervision will also need to be provided by the home university. A crucial pre-requisite for this idea to work in practice is that the credit for supervising the thesis will be granted to the supervising scientists at both the home university and the host university. Otherwise, there will be little incentive for supervision.

Profile for **UHOH:** Mixed modelling, genotype-by-environment interaction in plants, phenotypic stability, QTL-mapping in plants with complex designs for assessing the phenotypic data, missing data mechanisms in series of plant variety trials, optimisation of trialling systems for plant breeding, graphical representation of multiple comparisons, biometrical methods for cDNA microarrays.

Profile for **WUR:** Bayesian statistics for model calibration; genetic map construction in polyploid species; genetical genomics; statistical genetics; modelling of QTLx $E$  interactions; spectral image analysis.

Profile for **KVL:** Applied statistics/bioinformatics for the KVL areas: agriculture/horticulture/forestry/food/veterinary/human nutrition. In particular linear mixed models, non-linear and stochastic process modelling, censored/survival data modelling, bioinformatics, sensometrics (analysis of sensory data), chemometrics and multivariate data analysis.

Profile for **BOKU:** Statistical data analyses and modelling related to animal production, economics and optimisation (e.g. logistics), statistical methods for GIS applications as well as forest growth. Specific methods covered are time serious analysis, inperpolation routines, simultaneous regression techniques, logistic regressions, sampling design.

Profile for **SLU:** Biometry at SLU conducts research, as well as education on graduate- and undergraduate levels, within the disciplines of Statistics/Mathematical Statistics, Applied Mathematics, Theoretical Biology and Biophysics, and Environmetrics and Geoinformatics. In Statistics/Mathematical Statistics the research profile is experimental design, multivariate analysis, high dimensional analysis and linear models. In Bioinformatics they are working with QTL-analysis and mathematics for studying phylogenetic trees.

### **Summer schools**

Generally, the group thinks that summer schools are a useful form of joint activity. Due to the expected profile of an ELLS student, however, (see 1), the number of students that would be interested in a summer school with a rather specific main theme, is expected to be small.

SLU already offers summer schools in biostatistics on a more or less regular basis, partly in collaboration with other partners in Scandinavian countries. These can be opened to ELLS students, i.e. participation would be free. Travel expenses would have to be covered by the student. Thus, ELLS would have to raise travel funds for the students wanting to participate in a SLU summer university. The SA will make announcements of upcoming summer schools on the ELLS web-page.

This year SLU is involved in a summer school 6/6-18/6 in Pattern recognition (see <http://www.dina.dk/phd/s/s7/>) for more information). Anders Ringaard at KVL is the main coordinator of these activities and he was fairly positive to couple these summer schools to Euro League activities. Some places have been reserved for this year's summer school.

Initiation by the SA of summer schools especially for ELLS is felt to be too labour intensive, if this activity were to be repeated annually. Most importantly, each joint summer school requires a new effort to raise funds. Occasionally, the SA may be able to identify a hot topic for a summer school. Currently, the SA sees no need for an ELLS-initiated summer school in biostatistics/bioinformatics.

Suggestion of Hans-Peter Piepho after the meeting: "Assuming SLU can open some of the summer schools it is currently involved in, let's wait how many ELLS students express interest and how many actually participate. If we get a positive feed back, it may be worthwhile to initiate ELLS summer schools for the SA."

### **Web page**

Information on courses and on Master theses will be set up on ELLS web page.

### **Plans for 2004**

Set up web-page

by 3/2004

Set up a complete inventory of courses given in English (ECTS format)

by 4/2004

Summer school

6/2004

Get courses mutually recognised

by 7/2004

Table 1: List of courses to be offered within ELLS Subject Area “Biostatistics/Bioinformatics”

University	No.	Title	Level	ECTS points	Pre-requisites	Schedule	Status
WUR	1	Modern statistics for Life Sciences	M.Sc.	5.5	2 courses in statistics	7 weeks, Jan-Feb	running
	2	Numerical analysis of ecological data	M.Sc./Ph.D.	1.5	1 course in statistics <sup>&amp;</sup>	on demand	running
KVL	1	Mixed linear models	M.Sc./Ph.D.	6	2 courses in statistics	15 weeks, start Feb 1	running
	2	Statistics for Veterinarians	M.Sc./Ph.D.	6	1 course in statistics <sup>§</sup>	2-3 months, start Feb 1	running
	3	Chemometrics and multivariate data analysis	M.Sc./Ph.D.	6	2 courses in statistics	15 weeks, start Feb 1	first held in 2005
	4	Bioinformatics	B.Sc./M.Sc.	6	1 course in statistics <sup>§</sup>	14 week, Sep-Dec	running
	5	BioLinux	B.Sc./M.Sc.	6	1 course in statistics	14 weeks	running
UHOH	1	Quantitative methods in the biosciences and economy	M.Sc.	6	1 course in statistics	14 weeks, start Oct	running
	2	Mixed model applications in plant and animal sciences	M.Sc.	6	2 courses in statistics	14 weeks, start Apr	first held in 2005
SLU	1	System analysis, model building and simulations	M.Sc./Ph.D.	10.5	?	7 weeks	running
	2	Discrete structure for bioinformatics	M.Sc./Ph.D.	4.5	?	3 weeks	running
	3	Experimental design	M.Sc./Ph.D.	7.5	1 course in statistics	5 weeks	running
BOKU	1	Statistics in animal production	M.Sc./Ph.D.	4	Basic statistics course	14 weeks winter sem.	running
	2	Optimisation models for production and logistics	M.Sc./Ph.D.	3	none	14 weeks summer sem.	running
	3	Biometrics in Forestry	M.Sc./Ph.D.	3	none	14 weeks winter sem.	running
	4	GIS and statistics for landscape planning	M.Sc./Ph.D.	4	basic statistic course	14 weeks winter sem	running
	5	Statistical analysis with SPSS	M.Sc./Ph.D.	2	basic statistics	14 weeks winter sem	running

§ + at least one course in computer science, genetics or molecular cell biology

§ + a degree in veterinary or biological sciences

& We are awaiting approval by WUR to open this course to ELLS





## Presentation of the Subject Area Forestry

ERIK SUNDSTRÖM  
SLU, Faculty of Forestry, 90183 Umeå, Sweden, Erik.Sundstrom@ssko.slu.se

### Our group

Our group in the subject area “forestry” consists of old and new members from our five ELLS partner universities.

Previous “old” representatives are Bo Larsen from KVL, Denmark and Reinhard Böcker from Hohenheim, Germany.

New in the group are Hubert Hasenauer from BOKU, Austria, Gerrit Epema from Wageningen, Netherlands and Erik Sundström from SLU, the latter is also acting as co-ordinator of this subject area, replacing the previous co-ordinator Helene Lundquist.

### Previous activities and current status

The previous SA-group did not meet much and it is relatively unclear what they actually achieved.

This new SA-group has had some e-mail-contacts but met for the first time on Sunday 15 February, one day before this ELLS-meeting in Hohenheim. The new group had fruitful discussions and agreed upon three different approaches for the ELLS-cooperation in “forestry”.

### Future ELLS-Forestry activities - 3 Concepts/Approaches

- 1 New ELLS M.Sc. Forestry
- 2 Interaction with other networks
- 3 Promote existing international M.Sc.-programmes at ELLS-universities

The three approaches vary in amount of ambition, commitment and cooperation, with the first concept (1) as the heaviest and (3) as a more easy start. The second (2) is maybe the most realistic approach which can be realised with a minimum of extra effort and input. Each concept is described in more detail below.

#### 1 The First Approach - New ELLS-M.Sc.-Forestry

To develop a completely new joint ELLS-M.Sc.-programme in forestry we think that we need to have a *vision* and know *why* we are doing this. What are the main reasons for this effort? Is it to attract *more students* to our respective universities and programmes or is *higher quality* the main point and what is the *added value* that we can achieve in this cooperation?

#### Vision

We have outlined one possible vision here below, but it should be viewed as just an example at this stage. That vision could be

*“The Role of Forestry – The European Dimension”*

*The settings for forestry vary over Europe from North to South and West to East. There is also a variation in the role of the forest conceived by the society. Some needs change gradually due to the geographical location, i. e. “growth potential”, while others, such as recreational needs, might*

change abruptly at country borders. There is also an ongoing change over time, one important aspect being that countries in Europe now are becoming more integrated, which will have an impact on the timber market, the industry structure, the tourism etc. A greater integration, understanding and ability to communicate will also give opportunities as well as responsibilities to take actions against common threats, such as global change or impoverishment of our nature.

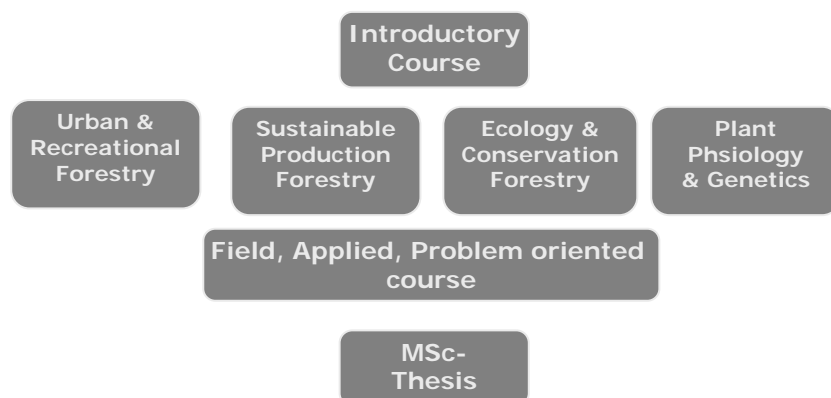
For the future it is necessary that people involved in management of the forestry resource will have a deep knowledge of these conditions. The suggested forestry education within in the ELLS could hereby give a significant contribution. The courses constituting the master programme should be chosen and formed to give a coherent knowledge about sustainable forest management, using the expertise of the collaborating universities and the special conditions connected to their locations. Important subjects would be economical forestry, nature conservation, stability against storm, erosion, pests, etc., protection of the water resource, urban forestry, management of forests in tourist areas, forest policy and policy formed to promote nature conservation and protection. The ELLS universities have a unique role as they represent areas where the focuses on the listed subjects are quite different.

### **Theme**

Based on a vision a new M.Sc.-programme should have a theme or topic area that will act as a “red thread” through the programme. Examples of such themes could for example be

- Regional, European, or global dimensions
- Sustainability
- Biodiversity
- Forest policy
- ...?

### ***New ELLS-M.Sc.-Forestry – an example***



### ***Joint introductory course, 7.5 ECTS (new)***

This introductory course should be based on any of the selected ”themes” with the intention to bring students and teachers together in one place for a shorter period of 4-5 weeks, 7.5 ECTS)

### ***Elective, existing courses (ELLS-label,) 3-4 themes/topics, 60-70 ECTS***

This could be a number of existing courses that students can select, maybe with a certain minimum number of credits at home and other partner universities.

Examples of such topics could be:

### *Urban & Recreational Forestry*

- Environment, Aesthetics and Culture – Humanistic Perspectives on Planning and Management of Urban Forests and Agricultural Land (15 ECTS, SLU)
- Community based conservation and rural development (6 ECTS, WUR)
- Community Forestry (9 ECTS, KVL)
- Social Issues of Mountain Forestry in an International Context (5 ECTS, BOKU)

### *Sustainable Production Forestry; Products & Markets*

- Harvesting Systems for Mountainous Regions (4.5 ECTS, BOKU)
- Forestry in Southern Sweden - Silviculture and Ecology (15 ECTS, SLU)
- Introductory Course in European Forestry (7.5 ECTS, SLU)

### *Ecology & Conservation Forestry*

- Economic Aspects of Forest and Nature Conservation (7.5 ECTS, WUR)
- Ecology of Mountain Forests (7.5 ECTS, BOKU)
- Fish and Wildlife Management (15 ECTS, SLU)
- Conservation Biology (15 ECTS, SLU)

### *Plant Physiology & Genetics*

- Management of Genetic Resources of Woody Plants (6 ECTS, KVL)
- Plant Physiology (15 ECTS, SLU)

### ***Field, applied, problem-oriented course, 15 ECTS (new)***

This is the third step of this M.Sc.-programme and the main purpose of this course is to bring students and teachers together for a second time where they have collected new and enhanced knowledge in their “theme” and where they now can apply the “vision”.

This course can rotate for several years between different ELLS-partners depending on their specific competence.

### ***M.Sc. Thesis, 30 ECTS***

The final stage of the M.Sc.-programme is the thesis writing. Here there are many different options how this can be organised and we need more discussions.

The thesis work can be carried out either at the home university or at one of the other ELLS-partner universities. There can also be a joint concept with supervisors from more than one ELLS university, etc.

## **2 The Second Approach - Interaction with other Networks**

In forestry higher education there already is an International network, **SILVA-Network**, which was founded in 1989. Today this network consists of members from 41 forestry faculties in 24 European countries. SILVA has the common objective to stimulate and facilitate educational co-operation in the field of Forestry in Europe.

Since the start in 1989 SILVA-network has been involved in a number of projects and activities, such as:

- *EU-Canada (student exchange)*
- *ASEFOREP (Asian European Forestry Exchange Programme)*
- *VIEFOR (Virtual European Forestry Faculty)*
- *AFANet (thematic network – the European dimension in education)*
- *EUFORLA (Europe-Forest-Latin-America, ALFA-application)*

But besides these projects SILVA is in the second year of administrating a joint M.Sc.-programme with joint curriculum in forestry education: *M.Sc.-European Forestry*.

This programme has today six partners, where three are ELLS-universities (*BOKU, SLU and Wageningen*). The other three universities are *Freiburg in Germany, Lleida in Spain, and Joensuu in Finland*.

### ***Reasons for cooperation and joint activities with SILVA-Network***

In our Subject Area group we can see a number of reasons for the second approach, i.e. “cooperation with existing networks”. The main reason is:

Within SILVA’s M.Sc.-European Forestry group there are already “*many lessons learned*” since it took many meetings and discussions before they could develop a functioning “*working concept*”, which now can be further developed in cooperation with ELLS. This process should not be too difficult since “*three ELLS-partners are already involved*” and the other members are “*natural partners*” in the European forestry education.

### **3 The Third Approach - Promote Existing International M.Sc.-Programmes at ELLS-Universities**

The third approach that we discussed in our SA-Forestry group would be to “*market and promote already existing M.Sc.-programmes*” within our ELLS-group, such as BOKU’s “Mountain Forestry” or SLU’s “Forestry in Southern Baltic Sea Region”. This could be done by encouraging students from other ELLS-universities to take part, by increasing and stimulating teachers’ exchange, and possibly by creating “summer schools” with core competence from ELLS partners.

### **Problems & challenges in future ELLS activities**

In our group we discussed a number of problems (challenges?) that need to be dealt with before ELLS can “fly”. These points will just be listed here and not further commented.

- “Top down” initiative – that needs to get internalised – become “bottom up”.
- Tight economies and budget cuts set limits.
- Incentives for ELLS as well as internationalisation are needed.
- Commitment – must come at all levels!
- Added value – for whom? Needs to be developed and clarified.
- Block vs. semester system
- Awarding universities, double examination?
- Tuition fees? ELLS students vs. outside-students?
- Have Board & Task Force to solve major problem and obstacles
- Identify unique expertise at each ELLS-partner, our “golden eggs”
- Find new ways of co-operation using new technologies

### **SA-Forestry - How do we proceed? - Activity plan 2004/05**

We have decided to continue our work along two parallel approaches, i.e. 2) and 3).

By doing this we suggest the following steps.

- 1 We suggest a name change of our subject area from “Forestry” to “**Forest and Nature Sciences**”. This would broaden our subject into landscape and environment and also emphasise the scientific qualities.
- 2 We decided to encourage our ELLS-students to apply to the existing SILVA’s M.Sc.-EF starting Sept 2004.
- 3 Start discussions of “how ELLS and SILVA M.Sc.-EF can cooperate and develop a joint study programme/curriculum”. First meeting between the 2 consortia is planned to be in Munich 15<sup>th</sup> of April 2004.

## Note on the Meeting of the ELLS Subject Area Social and Economic Sciences

AAD VAN TILBURG

Department of Social Sciences, Wageningen University and Research Center, P.O. Box 9101, NL-6700 HB Wageningen, The Netherlands, aad.vantilburg@wur.nl

### Members of the Subject Area Social and Economic Sciences (SES)

Hans A. Andersson	SLU	Hans.andersson@ekon.slu.se
Per Svejstrup Hansen	KVL	psh@kvl.dk
Manfred Gronalt	BOKU	manfred.gronalt@boku.ac.at
Heiner Imkamp	UHOH	imkamp@uni-hohenheim.de
Madeleen Kirchmann	WUR	madeleen.kirchmann@wur.nl
Barbara Seel	UHOH	hhoek@uni-hohenheim.de
Aad van Tillburg	WUR	aad.vantilburg@wur.nl

Interested:

Dragana Saric                                      University of Sarajevo

Participants of the SA SES meeting in Hohenheim were: Heiner Imkamp, Aad van Tilburg and Dragana Saric

### Aim of the meeting:

#### *Select areas of interest that may challenge*

- B.Sc. or M.Sc. students to participate in specific courses (e.g. in an exchange or Erasmus programme)
- lecturers from other ELLS universities to teach in each other's courses
- staff and students to organise a joint summer school or another activity of interest.

### *Selection of topics*

We selected the following two specific fields of potential common interest:

- 1 Consumer behaviour and consumer protection in relation to food (product) safety
- 2 Economics and sociology of regional development

#### ***1 Consumer behaviour and consumer protection in relation to food (product) safety***

Food (product) safety is a subject that attracts much interest, also within ELLS circles. Improving the safety of food (products) represents, however, one side of the coin: the product. Consumer behaviour with respect to food safety and consumer protection (governance structures) is representing the other side.

Questions:

- Are you as ELLS partner willing/interested to share ideas, courses or lecturers regarding this topic? How?
- Which course(s) can you already offer to ELLS students in this subject?
- In which time of the year? How many ECTS? Etcetera.

### ***Economics and sociology of regional development***

- Regional development attracts much interest of students, scientists and authorities. The subject is relevant within countries of, for example, the ELLS members, with respect to East-West relations within Europe and also regarding North-South relations on a global scale.
- Regional development can be studied from many points of view, also within the social and economic sciences.
- Several institutes have been specialising on East-West relations within Europe, for example, the Eastern Europe Centre of the University of Hohenheim and the Institute of Agricultural Development in Central and Eastern Europe (IAMO) in Halle/Saale.

#### Questions:

- Are you as ELLS-partner willing/interested to share ideas, courses or lecturers regarding this topic? How?
- Which course(s) can you already offer to ELLS students in this subject?
- In which time of the year? How many ECTS? Etcetera.

## ICT Supporting Education

HANS BRONKHORST<sup>1\*</sup>, HENDRIK KLOMPMAKER<sup>2</sup>

<sup>1</sup> Staff department of Education, Wageningen University and Research Centre, P.O. Box 9101, NL-6700 HB Wageningen, Netherlands, hans.bronkhorst@wur.nl

<sup>2</sup> Department of ICT, Wageningen University and Research Centre, P.O. Box 9101, NL-6700 HB Wageningen, Netherlands, Hendrik.klompmaker@wur.nl

\* Corresponding author

### Overall actions during 2003

After the successful meeting in December 2002 in Wageningen the expectations were high. Collaboration seemed rather easy to organise, everybody had promised his or her full support. But end January it proved already quite difficult to get the first video conferencing seminar smoothly organised. And the proposal for the joint Master module, with duration of ten months, staggered so much, that the decision was taken to bring the time back from ten months to eight weeks. Two partners decided to participate and it proved to be a big success. So much, that in 2004 there will be a follow-up, with the special aim to improve the didactical and technical aspects, after which it can become a forceful tool for other specialisations as well. Whereas in 2003 only two partners participated, Wageningen and Hohenheim, there is hope that Uppsala and Vienna will this year join in.

The only other action that took place was the identification of possibilities to collaborate with North American universities. Several possibilities have been identified, but not concretised, as on the LAT activity no agreement had been reached within our group at that time. Working together within the framework of the Euro League for Life Sciences requires patience, but gradually possibilities expand.

### The Learning Apart Together (LAT) Project

**Objective:** Run an intra-universities' students project in which geo-information science knowledge and skills have to be applied in a small project setting. Communication between the students of the different institutes will be based on the project site which will be supported by webcam-based netmeeting and video conferencing.

**Boundaries:** a limited number of students (2 of each institute) will participate in a specific project case. The GIS applications will be based on local GIS-software. Netmeeting will be the tool to discuss and present the preliminary results on line. Video conferencing will be used for more general and plenary sessions.

- Planning: October - November 2003
- Knowledge + tools: Students will have a basic understanding of GIS and GIS-tools like Arc-view plus extensions
- Didactical interest: To understand the way that students interact and communicate with these ICT-tools
- Partners participating: Wageningen University and the University of Hohenheim
- Staff involved: Dr.ir. Ron van Lammeren, WUR, and Dr. Klaus Schmieder, UHOH

## **Abstract**

This report gives an overview of the Euro League project “Learning Apart Together “. Besides the revised project proposal, the results of the student project, the first learning apart together case, and some remarks and lessons learned about the use of video conferencing and webcams are offered by this report.

The student project focused on the development of a landscape classification based on geometrical parameters like size, length and shape of landscape objects and open spaces. The results have been compared for the Dutch topographical 1: 10000 datasets (TOP10 VEC) and the German topographical datasets 1:25000 (ATKIS).

However the results of the students’ project are really of interest in this abstract some concluding remarks about the use of webcams and video conferencing tools concerning the didactic interest.

The students came up with the following evaluation. They did meet difficulties to start up the project due to technical problems. For this reason the students did not reach a sufficient level of contact during the first one and half weeks. During this period contacts were mainly made through e-mails, and then followed by a phone call.

## **Welcome to the LAT (Learning Apart Together) Quickplace!**



The first online discussion was made through audio and webcam in the second week. Since then, the cooperation has become more efficient. There had been 3 to 5 regular contacts each week. Apart from e-mails, other communication techniques were also applied, i.e. quickplace (project site for publishing discussions, results, plans etc.), net meeting (white board, share of software programs), MSN (webcam, voice chat). Exchange of ideas became much easier through these different contact means.

The best cooperation was realised during the discussion of the definition of *space-forming objects*. Due to different levels of GIS knowledge and software condition, there were some difficulties in applying the methodology, but both teams cooperated well in reaching a common agreement. During the data processing session, there was not only cooperation between the teams, but also between the supervisors and students. In time of need, the technical staff did good cooperation in solving the technical problems. The students summarise that the overall cooperation was at a good level. In 2004 there will be a follow-up.

The detailed report is available at  
<http://www.euroleague-study.org/subjectareas/ictlat/index.html>.



## Environmental Science

HANS CHRISTIAN BRUUN HANSEN

Department of Natural Sciences, KVL, Thorvaldsensvej 40, DK-1871 Frederiksberg C., Denmark,  
haha@kvl.dk

### Introduction

The Subject Area Environmental Science (EnvSci) has been part of the ELLS since the kick-off meeting in Wageningen, November 2001. However, it was not until February 2003 when a meeting was held at KVL, that the content and direction of the Environmental Science Subject Area became more concrete. At the Copenhagen meeting which had 14 participants, it was decided to develop a summer field course focusing on the diversity of environmental problems and challenges in Europe taking advantage of the ELLS universities as experienced excursion guides and knowledge centres at six different locations in Europe. In addition the development of a common textbook accompanying the summer course was discussed. At the meeting the different ELLS-EnvSci representatives gave presentations of the different courses and study programmes within Environmental Science at their home universities demonstrating that the ELLS universities cover many aspects of Environmental Science ranging from molecular environmental chemistry to environmental economics and politics. The focus is mainly on soil and water resources.

The EnvSci working group met again September 2003 at UHOH to discuss in more detail the ideas presented at the Copenhagen meeting. The summer course was now called European Field Excursions in Environmental Science (EFEES). It was decided to run the first summer course in Denmark in 2004 and to apply for ERASMUS funding for the development of future courses. In addition it was decided to make a listing of all courses in Environmental Science at the ELLS universities and to formulate specific semester packages, i.e. collection of selected courses in Environmental Science at each university which are taught in English and which would make up coherent 1/2 year study programmes for visiting students. The aim was to formulate semester packages, which did not overlap too much between universities, but rather could supplement each other. Finally, all information on courses and semester packages should be presented on the ELLS web page. The EnvSci working group planned a new meeting in spring 2004 - and this has now been held as part of the Hohenheim conference. The group will meet during August 2004 in connection to the first EFEES course. The fifth meeting will be held in Vienna during spring 2005.

The working group comprises the following members:

- Prof. Andreas Fangmeier, UHOH
- Reader Chris Mullins, AU (from March 2004 represented by Assoc. Prof. Mike Wilson, AU)
- Assoc. Prof. Jan Lagerlöf, SLU
- Assoc. Prof. Hans Bartelink, WUR
- Prof. Hans Christian Bruun Hansen, KVL
- Prof. Willibald Loiskandl, BOKU

Several persons are affiliated to the group, not at least Assoc. Prof. Bjarne W. Strobel, KVL, who is responsible for the EFFES 2004 course, and Prof. Karl Stahr, UHOH, who is a main contributor to the EFEES 2005 in Germany. Although the University of Aberdeen (AU) has left the ELLS network, AU will remain affiliated with the ELLS-EnvSci to enable sharing of students and experiences; in addition AU is one of the partners in the ERASMUS proposal for the EFEES

activity. AU has an active BSc programme in EnvSci and the EFFES course is going to become an integrated part of the study curriculum in EnvSci at AU.

In the following sections the activities initiated by the EnvSci group will be presented in more detail.

### Summer courses

Summer courses are relatively easy to organise as it is possible to fit them into the different teaching schedules at the ELLS universities. In addition teaching at summer courses is rather flexible which makes it possible to accommodate the different teaching requirements at the ELLS universities. The objectives of the EFEES appear from Figure 1.

**Euroleague**  
FOR LIFE SCIENCES

**Environmental Science**

**Activity 1: EFEES**

- 6 ECTS summer course circulating between partners; up to 30 students; end of BSc/ start of MSc
- Objectives:
  - apply environmental science theory in the field
  - types of pollution, environmental effects, remediation
  - environmental policies and local management strategies
  - learn new tools for analysis of environmental data
  - combine different sources of knowledge in EnvSci
  - solve problems in a group of international students
- Format: video-link meetings; 1 week of preparation in advance; 2 weeks on-site: lectures, excursions, exercises; evaluation (report; oral presentation) at end of course
- Cost: 200 € to cover accomodation and food

Fig. 1: General objectives and format of the EFEES summer courses

The course is a “hands-on” course; environmental science is taken into the field. Europe has a long history of land use and cultivation and hence Europe houses a multitude of environmental show cases, which are very instructive as teaching objects for students in environmental science. Each EFEES course has an overall theme; e.g. the EFEES 2004 course will focus on pollution and environmental management of intensively cultivated landscapes (Figure 2). The course is initiated by a video conference where the students and teachers from the partner universities meet for the first time. At the video conference the region to be visited during the internate-part of the course is presented, and the different topics to be treated, the time schedule and the topics for project work are explained. Five students participate from each university making up a total of 30. Teachers are mostly coming from the organising university but teachers from the other ELLS universities also participate as well as invited speakers from research institutions, regional administrations or the private sector. During the week after the video conference the students prepare themselves for the course, mostly by reading textbook material and by doing literature search in relation to the topics to be covered at the course. In addition the students may start to consider which topic they are going to select for the project work to be carried out at the internate. The internate programme consists of morning lectures, afternoon (or full day) excursion programmes, and afternoon and evening exercises/project works. The students are evaluated at end of the course before departure from the internate; evaluation comprises grading of project reports as well as oral presentations. The course fee (€200) is very modest for the EFEES 2004 and most expenses are covered by KVL; students need to cover their own costs of travelling to and from the excursion sites whereas accommodation,

meals and transportation during the course is covered. It is attempted to place all study material at the internet and to make use of the CampusNet (KVL) for all parts related to the course, at least for the EFEES 2004 course.



**Euroleague**  
FOR LIFE SCIENCES

**Environmental Science**

...this years EFEES

**Intensively Cultivated Landscapes and the Environment; 2 - 20 August**

**Topics covered:**

- Nitrate leaching and modelling
- Phosphate balances and export from arable soils
- Wetlands restoration
- Pollution of freshwater/groundwater with pesticides, detergents, veterinary drugs
- Administration/legislation/planning

**Area:** Vejle County, Jutland, DK. Stay at Uldum Folk Highschool

**Responsible:** Ass. Prof. Bjarne Strobel (bjwe@kvl.dk)

Fig. 2: Topics covered by the EFEES 2004 summer course


An ERASMUS Intensive Programme application to cover the expenses for the EFEES courses 2005-2007 has been submitted March 2004. The next EFEES will take place at UHOH (2005), SLU (2006) and BOKU (2007). Details on the course format, contents, etc. are to be found in the proposal. Summary of the application is presented in Table 1.

Table 1: Summary of Erasmus IP application for the EFEES activity, March 2004

The EFEES summer school developed by 6 EU universities will guide a group of 30 international university students in environmental science to understand the influence of human activity on composition and functioning of various ecosystems characteristics (unique) of different European regions. With a multidisciplinary approach EFEES focuses on lessons learned from typical cases of environmental degradation, conservation and management in Europe, and will include the influence of economy and politics on environmental management. An accompanying textbook will present background information, data and interpretations for the cases studied and will be published on the internet.

The 2005-course comprises: (i) one week of theoretical preparation by means of e-learning, and (ii) two weeks of field excursions supported by lectures and seminars along a transect from the Rhein-valley to the summit of the Black Forest in Germany. Study subjects will include geology, climate and vegetation, global change, heavy metal mining, soil and water pollution, water-way management, restoration and remediation. Reports and posters on various aspects of the study area will be prepared by the students and assessed by means of a grading scale. A final report will include course assessment and evaluation as well as recommendations for future course development.

Another summer course offered under the ELLS programme is focusing on plant nutrition and the role of rhizosphere microorganisms. The course is supported by an ERASMUS IP programme. It is held at BOKU but also includes pre-course work; excursions are part of the programme (see Figure 3).



**Environmental Science**


**Activity 2: Soil - Microbe - Plant Interactions**

- Summer course in Vienna plus 3 days excursion; June 29 - July 9; MSc/Ph.D level; 12 ECTS
- Format: Introductory lectures, students presentations, practical lab and modeling courses and field excursions pre-course work of about one week. Evaluation based on group work + written exam
- Costs: Travel expenses, dinners, local transport and students fees (200 EUR / student) have to be covered by the student or their host university.
- Course information <http://www.rhizo.at/>

Fig. 3: Soil-Micro-Plant Interactions summer course at BOKU, summer 2004

### Textbook

Textbooks in environmental science are abundant; however, most are based on examples from the North American continent; furthermore there is a lack of books providing well-described case studies. Thus, the EnvSci workgroup decided to develop a textbook to accompany the EFEES summer courses; the textbook is called “Natural Resources and the Environment - European Case Studies”.



**Environmental Science**

**Activity 3: Textbook**

- **Objectives:**
  - To provide data, description and interpretations of environmental pollution in Europe in relation to natural resource uses
  - To provide study material for the EFEES
  - To be used as a collection of worked-through case studies to accompany other courses in EnvSci.
- **Format:**
  - Book on the internet (easy to edit and update)
  - Each year the partner responsible for the EFEES will provide chapters (3 - 5)
  - Chapter format: abstract (1/2 page), background (3 pages), case description + data (5 - 8 pages), analysis + interpretation (5 pages), references.

Fig. 4: Objectives and format of the textbook Natural Resources and the Environment - European Case Studies

For each course the textbook will be expanded with new chapters covering the topics of the course (Figure 4). Each chapter provides a short introduction to the theory related to the topic; however, a detailed description of a case study including description of physiogeographic setting and monitoring data makes up the main part of each chapter. The aim is to produce a book covering classical and well interpreted examples of land use - pollution - environment interactions, such as eutrophi-

cation, erosion, salinisation/acidification, groundwater pollution with pesticides and other xenobiotics, groundwater management, acid rain and ecosystem stability, mining and dispersion of heavy metals, use of sewage sludge, pollution of radionuclides, carbon/nitrogen/phosphorus balances, management of landscapes/landscape restoration, pollution-biodiversity-ecosystem functioning, and remediation and environmental technology. The textbook will be published on the internet which makes it easy to update the textbook and to distribute it at start of the course. After some years the textbook will consist of a diverse collection of cases in environmental science and the book is thought to be useful not just for EFEES students, but also as a general study guide, as an excursion guide and as a reference book presenting classical examples of land use - environmental effects. The textbook is organised by an editorial committee headed by the main editor.

### Courses in Environmental Science

The five ELLS universities offer a number of courses in Environmental Science covering different aspects such as biodiversity/ecology, hydrology/drinking water, health aspects/food production, environmental chemistry/biology, and legislation/planning/environmental economics. To make it easier for students to spot and select the right courses we have prepared a listing of all courses in environmental science; the lists are published on the ELLS-EnvSci homepage (<http://www.euroleague-study.org/subjectareaenviroscience.html>). Courses have rather different formats and not all are taught in English. The listing comprises 55 courses at UHOH, 10 courses at BOKU, 13 courses at SLU, 8 courses at KVL and 85 courses at WUR. Each course is described by its title, number of credits (ECTS), teaching period, evaluation form, prerequisites, language, BSc/MSc type, contact person/department and a short description of course content. Examples of courses in Environmental Science at the ELLS universities are listed in Table 2.

Table 2: Examples of course titles in Environmental Science at the ELLS universities

SLU	KVL
<ul style="list-style-type: none"> <li>• Biogeochemical Cycles</li> <li>• Biogeochemistry in Tropical Ecosystems</li> <li>• Soil Remediation</li> <li>• Nutrient Imbalances in Agroecosystems</li> <li>• Applied Environmental Assessment</li> <li>• Environmental Impact Assessments (EIA) in Practice</li> <li>• Microbial Environmental Biotechnology</li> </ul>	<ul style="list-style-type: none"> <li>• Natural Resource Economics</li> <li>• Environmental Impact Assessment</li> <li>• Environmental Soil Chemistry</li> <li>• Natural Resource Economics</li> <li>• Environmental and Ecotechnology</li> <li>• Advanced Environmental Economics</li> </ul>
UHOH	WUR
<ul style="list-style-type: none"> <li>• Air Pollution and Air Pollution Control</li> <li>• Ecotoxicology and Environm. Analytics</li> <li>• Matter Cycling in Agro Ecosystems</li> <li>• Global Change Issues</li> <li>• Environmental Pollution and Soil Organisms</li> <li>• Environmental Cost-Benefit Analysis</li> <li>• Environmental Management</li> </ul>	<ul style="list-style-type: none"> <li>• Principles of Environmental Sciences</li> <li>• Environmental Economics for Environmental Sciences</li> <li>• Air Quality</li> <li>• Environmental Systems Analysis</li> <li>• Fundamentals of Environmental Technology</li> <li>• Global Biogeochemical Cycles</li> <li>• Soil Quality</li> <li>• Environmental Toxicology</li> <li>• Physical-Chemical Processes in Environmental Technology</li> <li>• Water and Waste Management in Developing Countries</li> <li>• Advanced Environmental Hydraulics</li> <li>• Soil Pollution and Soil Protection</li> <li>• Theories and Models in Environmental Economics</li> </ul>
BOKU	
<ul style="list-style-type: none"> <li>• Environmental Physics</li> <li>• Water Pollution Control and Aquatic and Wetland Ecosystems in Austria</li> <li>• Waste Management in Developing Countries</li> <li>• Solute Transport and Mixing in Rivers</li> <li>• Effects of Air Pollutants and Nutrient Deficiencies on Mountain Forests</li> <li>• Ecology of Mountain Forests</li> </ul>	

## Semester packages

Semester packages are a collection of courses at each university, which make up a coherent study programme to be followed during one semester, and which may be attractive for visiting students. The semester packages represent an easy guide for students going to spend a full semester at one of the ELLS universities. Examples of semester packages at UHOH, KVL and SLU are presented in Table 3. All semester packages are published on the ELLS-EnvSci homepage.

Table 3: Selected semester packages in Environmental Science at UHOH, KVL and SLU

University	Semester	Package title	Courses
UHOH	Winter	Environmental Science	<ul style="list-style-type: none"> <li>• Matter Cycling in Agro Ecosystems (6 ECTS)</li> <li>• Global Change Issues (6 ECTS)</li> <li>• Inland Water Ecosystems (6 ECTS)</li> <li>• Quantitative Methods in Biosciences and Economics (6 ECTS)</li> <li>• Resource Economics and Production Theory (6 ECTS)</li> </ul>
UHOH	Winter	Environmental Pollution	<ul style="list-style-type: none"> <li>• Air Pollution and Air Pollution Control (6 ECTS)</li> <li>• Ecotoxicology and Environmental Analytics (6 ECTS)</li> <li>• Matter Cycling in Agro Ecosystems (6 ECTS)</li> <li>• Environm. Microbiology, Parasitology. and Microbial Ecology (6 ECTS)</li> <li>• Waste Management and Waste Techniques (6 ECTS)</li> </ul>
UHOH	Summer	Environmental Pollution	<ul style="list-style-type: none"> <li>• Environmental Pollution and Soil Organisms (6 ECTS)</li> <li>• Environmental Science Project (6 ECTS)</li> <li>• Interdisciplinary Soil Science Project (6 ECTS)</li> <li>• Environmental Policy and Legislation (6 ECTS)</li> <li>• Resource Economics and Sustainability (6 ECTS)</li> </ul>
KVL	Summer	Environmental Chemistry and Biology	<ul style="list-style-type: none"> <li>• Environmental Soil Chemistry (10.5 ECTS)</li> <li>• Environmental Microbiology (6 ECTS)</li> <li>• Environmental Aquatic Chemistry (10 ECTS; at Pharmaceutical Univ.)</li> <li>• Plant production and the environment (24 ECTS)</li> <li>• Project work in Environmental Chemistry (9 - 15 ECTS)</li> </ul>
KVL	Winter	Plant Production and the Environment	<ul style="list-style-type: none"> <li>• Environmental and Ecotechnology (6 ECTS)</li> <li>• Applied Ecology (6 ECTS)</li> <li>• Environmental Issues in Horticultural Crop Production (15 ECTS)</li> <li>• Biological Control of Insects (6 ECTS)</li> <li>• Project work in Environmental Science (9 - 15 ECTS)</li> </ul>
SLU	Winter	Ecology and the Environment	<ul style="list-style-type: none"> <li>• Effects of Air Pollutants on Soil and Vegetation (15 ECTS)</li> <li>• Agroforestry and Sustainable Land Use in the Tropics (7.5 ECTS) (50%)</li> <li>• Tropical Ecology, Environmental Conservation and Management (15 ECTS) (odd-numbered years)</li> <li>• Ecological Methods, (15 ECTS)</li> <li>• Environmental Impact Assessment (EIA) in Practice, (15 ECTS)</li> </ul>

## Master programmes and post graduate training

A common master programme or a European master programme in Environmental Science has been discussed both at the Copenhagen and Hohenheim meetings. The EnvSci group finds the idea of creating such programme appealing. However, we have decided to start up with less ambitious activities (summer courses, semester packages) which are also used as tests of the collaborative network and its efficiency. The vision is to develop a master programme consisting of teaching

modules (semester packages, summer courses, thesis work) at the different universities; the teaching modules consist of existing courses taught in English at the ELLS universities. The student then selects a number of modules, e.g. at two universities. If the semester packages at the 5 ELLS universities can be further developed to fully complement each other then - if a common scheme of teaching, grading and collaboration can be agreed - the development of a common ELLS master programme will become a relatively straightforward task. The creation of an attractive master programme in Environmental Science of course depends strongly on the degree of internationalisation at the member universities, i.e. the courses need to be taught in English, textbooks and exercise material in English, student information in English, common international teaching and grading systems and so on.

The establishment of a post-graduate network in Environmental Science is currently debated. Several of the ELLS universities are running Ph.D. schools; KVL has a post graduate school in Environmental Chemistry and Ecotoxicology (RECETO; [www.receto.dk](http://www.receto.dk)). It will be an easy task to share Ph.D. courses; a summer course may circulate between the ELLS universities. Marie Curie funding for Ph.D. school networks will be applied for.

### **Distribution of Information**

Adequate distribution and dissemination of information is critical to the ELLS network. Most students expect all relevant information to be available via the internet. Hence, the EnvSci group strongly advocates the development of an attractive and updated ELLS homepage with relevant information on ELLS structure, ELLS activities and links to relevant pages at the partner universities. Each Subject Area needs its own sub-homepage where information about EnvSci coordination meetings/minutes, summer courses, etc. can be placed.

### **Conclusions**

The Environmental Science working group is now well established, it has had 3 meetings and a number of activities have been initiated and are being organised:

- summer course: European Field Excursion in Environmental Science (EFEES); first to be run in August 2004
- summer course: Soil-Microbe-Plant Interaction; to be run in June-July 2004
- applications for ERASMUS IP funding of EFEES summer course activities; Soil-Microbe-Plant course already funded
- textbook entitled "Natural Resources and the Environment - European Case Studies" to accompany the EFEES summer course; to be published on the internet
- listing of courses in Environmental Science at the 5 ELLS universities
- organisation of semester packages
- increasing use of the ELLS homepage
- first attempts to structure common master programme based on modules (including study packages) at the different universities
- post graduate network

The success of the ELLS-EnvSci activities will strongly depend on the ability to attract students; it should be realised that the network has to be able to attract students from outside the partner universities, otherwise we will just circulate students between the ELLS universities which can not cover the costs of developing the ELLS activities. The working group strongly suggests that the Task Force initiates collaboration with countries in need of strengthening education in Environmental Science, such as East European countries, and countries in Asia, Africa and Latin America. Collaboration with USA and Canada can lead to valuable transfer of know how but the number of students travelling from North America to Europe is expected to be low and as such provides poor support of the ELLS network activities.





## **Development of a Joint M.Sc. Curriculum “Safety in the Food Chain”**

WOLFGANG KNEIFEL<sup>1\*</sup> AND ULRIKE ZITZ<sup>1</sup>

<sup>1</sup> Department of Food Science and Technology, Division of Food Quality Assurance,  
BOKU – University of Natural Resources and Applied Life Sciences, Muthgasse 18,  
A-1190 Vienna, Austria, wolfgang.kneifel@boku.ac.at, ulrike.zitz@boku.ac.at

\*) Corresponding author

### **Background and European dimension**

We have learned from recent food and feed crises that food safety is of paramount importance for the European Community and therefore has to be considered on an international basis. In front of this background, the ELLS universities have agreed that this topic will be integrated in a joint study programme providing a profound and academic expertise in food safety management.

The ELLS universities represented by the subject area coordinators (in alphabetic order: Anders Andren, Uppsala; Lutz Graeve, Hohenheim; Ralf Hartemink, Wageningen; Wolfgang Kneifel, Vienna; Susanne Knøchel, Copenhagen) have decided to develop a two-year Master programme “Safety in the Food Chain” (SIFC) (according to 120 ECTS) consisting of special contributions from the universities involved.

Although the infra-structure already existing at each partner university can be utilised as a basis for the development of this course, extra resources are needed for establishing and extending and developing specialised courses, e.g. in areas not present yet, for administration facilities, provision of tele-learning and communication facilities, website promotion, advertisement, and last but not least, for supporting student mobility/accommodation and coaching.

### **Aims**

The aim of this curriculum is to educate experts qualified for operational knowledge in HACCP (Hazard Analysis Critical Control Point), auditing, risk assessment, risk analysis and risk communication, outbreak investigation and crisis handling, food regulations and all related areas, on a multi-national level. National and international funds are to be sought to meet these aims.

### **Professional perspective**

The curriculum “Safety in the Food Chain” is to produce experts who will have access to several fields of employment, and who possess complementary knowledge to food scientists and technologists, veterinarians, ecotrophologists etc. They will be employed by enterprises of the food supply chain, national and international food safety agencies and authorities, the European Commission, food and feed producing and distributing companies, consultant agencies etc.

### **History and ongoing activities**

The activities of the subject area SIFC were initiated in November 2001 when a joint meeting of ELLS universities was organised at Wageningen University. At this time several possibilities of co-operation between the universities were discussed. In 2002, the subject area group SIFC started with

the clarifying fundamentals and establishing prerequisites necessary for the development of the curriculum. Important items were fact finding, formation of teams and discussion boards, defining elements of the study course as well as time schedules.

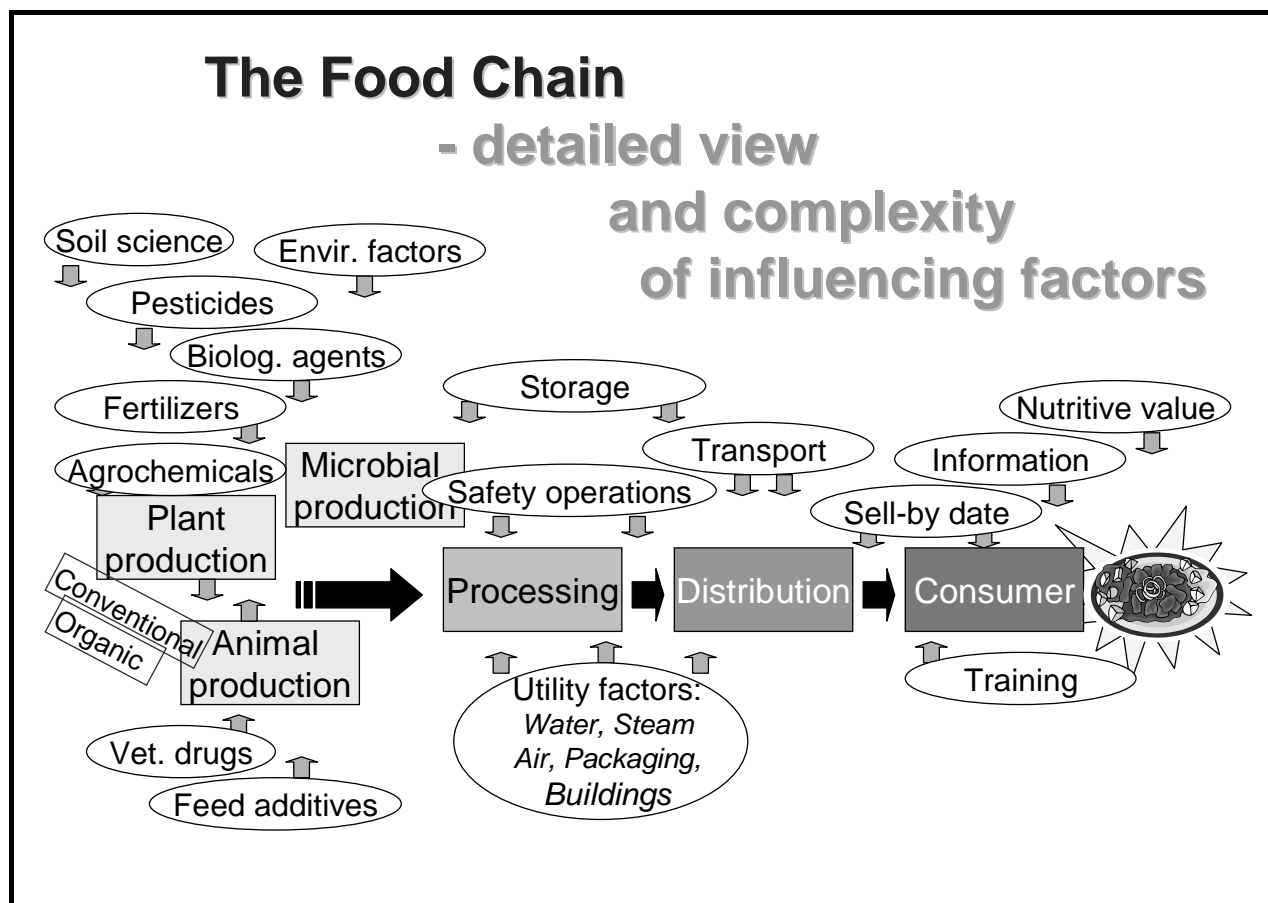


Fig. 1: The food chain – a detailed view

In order to be able to define the elements of the curriculum two items, the Food Chain as well as the White Book on Food Safety, should be considered as central points of crystallisation (Figure 1). Fruitful cooperation and communication among the representatives involved have revealed that interesting areas of specific knowledge are hosted at different universities and can be utilised for the purpose of SIFC. Based on this phase of fact finding, checklists were created indicating possible contributions by each partner university. Following a checklist (Table 1), the subject area members are making effort to make progress in the development of SIFC.

Table 1: Check list for the development of the curriculum SIFC

- Define parts and contents of programme
- Define scope and extent of lectures
- Clarify mode of lectures (seminar, lecture, practicals, etc.)
- Define lecturers & contributing “Euro League” universities
- Define accompanying tools (summer universities, etc.)
- Consider e-learning facilities
- Define resources
- Negotiate internal university resources
- Define places
- Establish a time table

Recently, another more detailed check list was disseminated among the partners for completion (Table 2).

Table 2: Example for one of the SIFC check lists

name of university:								
possible contributions / elements to SIFC MS-course	possible YES / NO	name of lecturer(s)	english YES / NO	start in summer semester 2005 ?	number of teaching units	ECTS	how many students could be accepted?	minimum number of students required?
consumer behaviour and lifestyle								
safety issues of food biotechnology (thesis)								
functional food								
novel food								
safety of organic foods								
analytical aspects of chemical food hazards								
food toxicology								
environmental pollution factors and their impact on food safety								
effect of processing on food ingredients								
advanced food processing technology								
food toxicology								
safety of animal feed and nutrition								
food allergies and intolerance								
risk population factors - epidemiology of food-related diseases (at initial period)								
nutrient – gene interactions, nutrigenomics								
animal hygiene								
economic aspects of food safety								

However, several points have still been left to be clarified. Among these, the harmonisation of regulations for admission, the generation of prerequisites for making a joint degree, the question of admission limits, how to perform examinations and how to organise students' and lecturers' mobility are of crucial importance.

### Outlook and future aims

Although some of the points defined in the check list have been dealt with and clarified so far, a load of work is still waiting to be done. The subject area members agreed about December 2004 as a deadline for having completed the entire list of elements of the curriculum. Concomitantly, advertising activities (website, brochures, leaflets etc.) will promote the Master course at different universities. If time and subject aims can be met, the programme will start as a pilot project in October 2005. This pilot phase will allow to gain experience, to correct or to modify certain structures and elements in order to improve the programme. Depending on the success of a recently submitted application for financial support, the start of the full programme in autumn 2006 is envisaged.



## **Summary of the Discussions in the International Relations Officers' Group**

ANNE GRETHE ROUTLEY

The Royal Veterinary and Agricultural University KVL, 17 Bülowsvej, DK-1870 Frederiksberg, Denmark, agr@kvl.dk

### **International Relations Officers' (IRO) Group:**

- Monica Bengtsson, SLU
- Jeanine Hermans, WUR
- Christine Donat, UHOH
- Margarita Calderón-Peter, BOKU
- Anne-Grethe Routley, KVL

### **Background**

According to the Memorandum of Understanding a central activity of the ELLS network is the development of joint study programmes. This is in full accordance with international trends and explicit recommendations within international educational policy: the Bologna Declaration (1999), the Prague Communiqué (May 2001) and the Berlin Communiqué (September 2003). The recent OECD review of Higher Education also reinforced the development of joint degrees.

The ELLS Task Force has asked the ELLS IRO group to investigate this topic into detail to support the subject area groups in their activities. During the Hohenheim Conference the IRO group has identified a list of issues to be further explored. This report presents our suggestions as well as our preliminary discussions.

### **Important issues to be further explored**

- I. Definition. Overview of ongoing discussions on definitions and procedures. What constitutes a joint degree/ double degree/ joint programme?
- II. Initiate and coordinate the discussion of a working definition and an operational basis for the ELLS network
- III. Developing a checklist for planning and implementing joint programmes across national borders (e.g. summer schools, joint degrees and other projects of educational co-operation)
- IV. Identifying existing legal constraints at national levels
- V. Mapping existing projects at the ELLS universities, lessons learned and suggestions for the future with regard to administrative matters

#### ***I. Defining a joint degree***

Presently no agreed and consistent definition of what constitutes a "joint degree" exists. Commonly listed criteria are: a joint degree must be developed by several universities, should be recognised in the different participating nations and is awarded by all universities. However, a recent survey of the European University Association (EUA) "TRENDS 2003, Progress towards European Higher Education) shows very clearly that "the legislation (in the various nations) does not yet allow the awarding of joint degrees".

Due to this uncertainty, task number one will be to establish a common ELLS understanding and definition and to clarify any legal, financial and practical constraints. This will create an operational basis for the network as well as qualifying the discussion on the feasibility of ELLS development of joint degrees. How can it be realised? And how much focus will we put on this kind of activity?

## ***II. Suggestion for a common ELLS definition***

As the legal basis for the development of joint degrees is not on place, we have chosen to focus on the development of joint degree programmes.

In the following we operate with a set of criteria stressing the large number of elements in need of careful consideration when planning a joint degree programme. An agreed ELLS set of criteria can be identified from this list.

Requirements for a joint ELLS degree programme:

- A joint ELLS degree programme is developed by at least two ELLS institutions.
- It consists of 120 ECTS points (i.e. a two-year M.Sc. programme)
- Basically, ELLS degree programmes are taught in English, but provide facilities for language and cultural learning.
- Students must spend at least a minimum of 30 ECTS and a maximum of 60 ECTS at at least one other ELLS partner institution.
- The M.Sc. thesis is jointly supervised by teaching staff members from at least 2 ELLS universities.
- Periods of study and examinations in an ELLS joint degree programme are fully recognised at all ELLS universities participating in the programme.
- ELLS institutions work out the curriculum jointly and co-operate on marketing and recruitment.
- Prerequisites for enrolment are jointly defined. A Joint Study Board per programme needs to be developed to define admission criteria and examination procedures.
- After completing a full programme, the goal of ELLS is that students will obtain a joint degree certificate. Since – due to legal constraints – this is not possible at the moment, the minimum is a degree certificate awarded and signed by one institution, but clearly stating (in the Diploma Supplement) that its holder has followed a jointly developed programme and listing all other partners involved. A more profiled alternative is to issue a double/multiple degree under the condition that the student fulfils the requirements for that degree at the awarding (one or more) ELLS institutions.
- A joint ELLS degree programme must be recognised by all participating institutions sharing the responsibility for the quality of programme level and academic content. As national regulations for accreditation and approval of curricula are different, a joint ELLS degree programme has to meet the national requirements of the different ELLS universities involved.

## ***III. Checklist for future discussions to be co-ordinated by the IRO group:***

- funding of the programme (via EU programmes like SOCRATES, LEONARDO, ERASMUS MUNDUS etc.)
- admission criteria and regulations
- enrolment procedures (prerequisites)
- regulation for exams (e.g. final exam)
- submission of thesis (definition of joint supervision)
- awarding of degrees

## ***IV: Constraints – legal, financial***

- awarding of a joint degree
- tuition fees (e.g. state funding of the programme in the case of Wageningen)
- use of state support systems for students in ELLS joint programmes

- accreditation (quality criteria)
- approval from the national authorities (creating a legal base for the programme)

***V: Map existing projects at the ELLS universities, lessons learned and suggestions for the future with regard to administrative matters***

Plan of action will be developed during the ELLSNA Conference in June 2004.





# Appendix 1: Addresses of ELLS Universities and List of Contact Persons at the ELLS Universities

## Addresses of ELLS universities

### **KVL**

The Royal Veterinary and Agricultural University  
Bülowsvej 17  
DK-1870 Frederiksberg C  
DENMARK  
Tel.: ++45 3528 2828  
Fax: ++45 3528 2079  
E-Mail: kvl@kvl.dk

### **UHOH**

University of Hohenheim  
D-70593 Stuttgart  
GERMANY  
Tel.: ++49 711 459-0  
Fax: ++49 711 459-3960  
E-Mail: post@uni-hohenheim.de

### **SLU**

Swedish University of Agricultural Sciences  
P.O. Box 7070  
SE-750 07 Uppsala  
SWEDEN  
Telephone: ++46 18 67 10 00  
Fax: ++46 18 67 20 00  
E-Mail: registrar@slu.se

### **BOKU**

University of Natural Resources and Applied Life Sciences, Vienna  
Universität für Bodenkultur  
Gregor Mendel Straße 33  
A-1180 Wien  
AUSTRIA  
Tel: ++43 1 47654-0  
Fax: ++43 1 47654-2606  
E-Mail: ells@boku.ac.at

### **WUR**

Wageningen University and Research Centre  
Postbus 9101  
NL-6700 HB Wageningen  
THE NETHERLANDS  
Tel.: ++ 31 317 477477  
Fax: ++31 317 484884  
E-Mail: info@wur.nl

## Lists of contact persons at the ELLS universities

### KVL Contact persons

<b>Group</b>	<b>Name</b>	<b>E-Mail</b>
Board	Rector Per Holten-Andersen	rektor@kvl.dk
Task Force	Pro-Rector Flemming Frandsen	fnf@kvl.dk
International Affairs ELLS Secretariat	Anne-Grethe Routley	agr@kvl.dk
ELLSNA Cooperation	Flemming Frandsen Anne-Grethe Routley	fnf@kvl.dk agr@kvl.dk
ELSA	Mette Kathrine Justesen Pia Snitkjær Nielsen	mkj@dsr.kvl.dk piasn@kvl.dk

### Contact persons for Subject Areas

Animal Science	André Chwalibog Poul Henning Petersen	ac@kvl.dk php@kvl.dk
Biostatistics/Bioinformatics	Per Brockhoff	pmb@kvl.dk
Biosystems Engineering	Simon Blackmore *	sib@kvl.dk
Developing Countries	Jakob Magid *	jma@kvl.dk
Environmental Science	Hans Chr. Bruun Hansen * Bjarne Strobel	haha@kvl.dk bjwe@kvl.dk
Forestry	Jørgen Bo Larsen	jbl@kvl.dk
Horticulture	Rolf Larsen *	Rolf.Larsen@vv.slu.se
ICT + GIS	Carsten Koch Gitte Preisler	ck@kvl.dk gip@kvl.dk
Plant Science/Seed technology	Jens Streibig	jcs@kvl.dk
Safety in the Food Chain	Susanne Knøchel Benedicte Hald	skn@kvl.dk beh@kvl.dk
Social and Economic Science	Per Svejstrup Hansen	psh@kvl.dk

\* Subject Area Coordinator

## UHOH Contact persons

<b>Group</b>	<b>Name</b>	<b>E-Mail</b>
Board	Rector Hans-Peter Liebig Pro-Rector Ute Mackenstedt	rektor@uni-hohenheim.de mackenst@uni-hohenheim.de
Task Force	Karl Hurle	khurle@uni-hohenheim.de
International Affairs	Christine Donat	donat@verwaltung.uni-hohenheim.de
ELLS Secretariat	Gabriele Klumpp	gklumpp@uni-hohenheim.de
ELLSNA Cooperation	Karl Hurle Christine Donat	khurle@uni-hohenheim.de donat@verwaltung.uni-hohenheim.de
ELSA	Benjamin Stich Stefanie Rein	stich@uni-hohenheim.de stefrein@gmx.d

### Contact persons for Subject Areas

Animal Science	Anne Valle Zarate* Johannes Steidle*	valle@uni-hohenheim.de jsteidle@uni-hohenheim.de
Biostatistics/Bioinformatics	Hans-Peter Piepho*	piepho@uni-hohenheim.de
Biosystems Engineering	Thomas Jungbluth	jungblut@uni-hohenheim.de
Developing Countries	Werner Doppler	doppler@uni-hohenheim.de
Environmental Science	Andreas Fangmeier Karl Stahr J. Rassow	afangm@uni-hohenheim.de kstahr@uni-hohenheim.de j-rassow@uni-hohenheim.de
Forestry	Reinhard Boecker	boeckerr@uni-hohenheim.de
Horticulture	Rolf Blaich	rblaich@uni-hohenheim.de
ICT + GIS	Regine Moevius Klaus Schmieder	moevius@uni-hohenheim.de schmied@uni-hohenheim.de
Plant Science/Seed Technology	Michael Kruse*	mkruse@uni-hohenheim.de
Safety in the Food Chain	Lutz Graeve Wolfgang Schwack	graeve@uni-hohenheim.de wschwack@uni-hohenheim.de
Social and Economic Science	Barbara Seel	hhoek@uni-hohenheim.de

\* Subject Area Coordinator

## SLU Contact persons

<b>Group</b>	<b>Name</b>	<b>E-Mail</b>
Board	Rector Ann-Christin Bylund	Ann-Christin.Bylund@adm.slu.se
Task Force	Vice-Rector Kristina Glimelius	Kristina.Glimelius@adm.slu.se
International Affairs ELLS Secretariat	Monica Bengtsson	Monica.Bengtsson@adm.slu.se
ELLSNA Cooperation	Kristina Glimelius Monica Bengtsson	Kristina.Glimelius@adm.slu.se Monica.Bengtsson@adm.slu.se
ELSA	Magnus Holmberg Johnny Lindgren	Magnus.Holmberg@sluss.nu v1johlin@stud.slu.se

### Contact persons for Subject Areas

Animal Science	Birgitta Malmfors	Birgitta.Malmfors@hgen.slu.se
Biostatistics/Bioinformatics	Dietrich von Rosen	Dietrich.von.Rosen@bi.slu.se
Biosystems Engineering	Christer Nilsson	Christer.Nilsson@jbt.slu.se
Environmental Science	Jan Lagerlöf	Jan.Lagerlof@evp.slu.se
Forestry	Erik Sundström*	Erik.Sundstrom@omv.slu.se
Horticulture	Rolf Larsen*	Rolf.Larsen@vv.slu.se
ICT + GIS	Roger Pettersson	Roger.Pettersson@ipc.slu.se
Plant Science/Seed Technology	Christina Dixelius	Christina.Dixelius@vbsg.slu.se
Safety in the Food Chain	Anders Andréén	Anders.Andren@lmv.slu.se
Social and Economic Science	Hans Andersson	Hans.Andersson@ekon.slu.se

\* Subject Area Coordinator

## BOKU Contact persons

<b>Group</b>	<b>Name</b>	<b>E-Mail</b>
Board	Rector Hubert Duerrstein Pro-Rector Erika Staudacher	hubert.duerrstein@boku.ac.at erika.staudacher@boku.ac.at
Task Force	Walter Wenzel Willibald Loiskandl	Walter.Wenzel@boku.ac.at willibald.loiskandl@boku.ac.at
International Affairs	Margarita Calderon-Peter	margarita.calderon-peter@boku.ac.at
ELLS Secretariat	Kerstin Trieb	kerstin.trieb@boku.ac.at
ELLSNA Cooperation	Walter Wenzel	walter.wenzel@boku.ac.at
ELSA	Sonja Ebner Sofia Edin	h9140580@edv1.boku.ac.at Sofia.Edin@blackbox.net
Video Conferencing	Ingrid Tobeiner	tobeiner@.boku.ac.at

### Contact persons for Subject Areas

Animal Science	Wilhelm Knaus	wilhelm.knaus@boku.ac.at
Biostatistics/Bioinformatics	Hubert Hasenauer	hubert.hasenauer@boku.ac.at
Biosystems Engineering	Herbert Weingartmann	herbert.weingartmann@boku.ac.at
Developing Countries	Michael Hauser	michael.hauser@boku.ac.at
Environmental Science	Willibald Loiskandl	willibald.loiskandl@boku.ac.at
Forestry	Otto Eckmuellner	otto.eckmuellner@boku.ac.at
Horticulture	Karoline Maria Jezig Johannes Balas	karoline_maria.jezig@boku.ac.at johannes.balas@boku.ac.at
ICT/GIS	Helmut Fuchs	helmut.fuchs@boku.ac.at
Plant Science/Seed Technology	Hans-Peter Kaul	hans-peter.kaul@boku.ac.at
Safety in the Food Chain	Wolfgang Kneifel * Ulrike Zitz	wolfgang.kneifel@boku.ac.at ulrike.zitz@boku.ac.at
Social and Economic Science	Manfred Gronalt	manfred.gronalt@boku.ac.at

\* Subject Area Coordinator

## WUR Contact persons

<b>Group</b>	<b>Name</b>	<b>E-Mail</b>
Board	Rector Magnificus Bert Speelman	Bert.speelman@wur.nl
Task Force	Fons Werrij	Fons.werrij@wur.nl
International Affairs	Jeanine Hermans	Jeanine.hermans@wur.nl
ELLS Office Manager	Tamara Schalkx	tamara.schalkx@wur.nl
ELLSNA Cooperation	Martha van Rinssum	martha.vanrinssum@wur.nl
ELSA	Rudy Jonker Daniel Polders	rudy.jonker@wur.nl Daniel.Polders@wur.nl

## Contact persons for Subject Areas

Animal Science	Rene Kwakkel*	Rene.kwakkel@wur.nl
Biostatistics/Bioinformatics	Peter Finke Fred van Eeuwijk	peter.finke@wur.nl fred.vaneeuwijk@wur.nl
Biosystems Engineering	Joachim Muller Jan Willem Hofstee	joachim.muller@wur.nl Janwillem.hofstee@wur.nl
Developing Countries	Ken Giller Anja Kuipers	ken.giller@wur.nl Anja.kuipers@wur.nl
Environmental Science	Hank Bartelink Sjoerd van der Zee	hank.bartelink@wur.nl
Forestry	Gerrit Epema	gerrit.epema@wur.nl
Horticulture	Uulke van Meeteren	Uulke.vanmeeteren@wur.nl
ICT/GIS	Hans Bronkhorst* Ron van Lammeren	hans.bronkhorst@wur.nl Ron.vanlammeren@wur.nl
Plant Sciences/Seed Technology	Anja Kuipers*	Anja.kuipers@wur.nl
Safety in the Food Chain	Ralf Hartemink	Ralf.hartemink@wur.nl
Social and Economic Science	Aad van Tilburg* Madeleen Kirchmann* Martijn Koster	Aad.vanTilburg@wur.nl Madeleen.kirchmann@wur.nl Martijn.koster@wur.nl

\* Subject Area Coordinator

## Appendix 2: Documents

### Memorandum of Understanding (MOU)

to establish the Euro League for Life Sciences, a framework of cooperation between

1. University of Aberdeen, United Kingdom
2. Universität für Bodenkultur Wien, Austria
3. Universität Hohenheim, Germany
4. The Royal Veterinary and Agricultural University, Denmark
5. Swedish University of Agricultural Sciences, Sweden
6. Wageningen University, the Netherlands

These institutions shall hereinafter be referred to individually as a Partner Institution or collectively as the Partner Institutions.

- Whereas the Partner Institutions have investigated the possibilities of establishing a framework of cooperation between the relevant universities and
- Whereas the Partner Institutions wish to intensify their cooperation in high quality education in the fields of Natural Resource Management, Agricultural and Forestry Sciences, Life Sciences, Veterinary Sciences, Food Sciences and Environmental Sciences and
- Whereas this MOU focuses on the establishment of practical working relations in the fields of joint teaching and learning initiatives, student and staff mobility, quality assurance, policy development, strategy and internationalisation and
- Whereas the Partner Institutions have signed a Letter of Intent in September 2001 to confirm the above considerations,
- Now therefore the Partner Institutions agree to the following:

#### Article 0 – The name of the framework of cooperation

1. The framework of cooperation will be realised under the name of the Euro League for Life Sciences, hereinafter abbreviated as ELLS.

#### Article 1 – Purpose

1. The purpose of the framework of cooperation is to establish a network of leading universities in the fields of Natural Resource Management, Agricultural and Forestry Sciences, Life Sciences, Veterinary Sciences, Food Sciences and Environmental Sciences. This network should enhance the position and capability of all Partner Institutions through the sharing of expertise and resources as part of the development and implementation of their degree programmes.
2. The focus of the framework of cooperation is on joint teaching and learning initiatives, student and staff mobility, quality assurance, policy development, strategy and internationalisation.

#### Article 2 – Duration

1. The framework of cooperation is established for an unlimited period. Participation in this framework of cooperation may be terminated at any time by any of the Partner Institutions after said Partner Institution has discharged all liabilities incurred by its participation. A half-year notice of termination is required. This notice shall be sent to the Task Force Chair. A member of the Euro League network can be expelled if all other members decide unanimously in a Board meeting. The decision to terminate

participation in the framework of cooperation shall not affect students who are at that time participating in any ELLS activities or study programmes.

### **Article 3 – Internal organisation**

1. **There are four levels of internal organisation:**
  - the Board of Rectors/Principals/Presidents (hereinafter referred to as the ELLS Board)
  - the Task force (TF)
  - the Operational teams, for example staff team or International Relations Officers
  - the Euro League Student Association (ELSA) – see Article 9
2. **The ELLS Board holds at least one meeting per year (preferably in the autumn). The ELLS Secretariat is responsible for organising the content of the ELLS Board meeting; the host institution is responsible for the logistics.**
3. **The Task Force members are mandated by their home universities to prepare and make presentations to the ELLS Board concerning strategic and policy issues which require a final decision by the Board. The members of the Task Force coordinate the general activities of ELLS; in this capacity they communicate with individuals at their home universities who are authorised to plan and implement activities within the scope of ELLS. They are also responsible for the Plan of Cooperation which their home universities are required to submit to the TF (see Article 3.6).**
4. **Both the ELLS Board and the TF shall be chaired by a representative of one of the Partner Institutions. That Partner Institution will also host the ELLS Secretariat. The Chair will rotate every 12 months. The ELLS Board shall appoint the Chair; during each rotation cycle, all Partner Institutions hold the Chair once. The Chair shall be supported by the previous Chair and the subsequent Chair. Wageningen University will be the first Chair and will hold this office from the formal beginning of ELLS until 1 September 2003.**
5. **Each Partner Institution has one vote on the Task Force and one vote on the ELLS Board. ELSA also has two votes on the TF and one vote on the ELLS Board. New Partner Institutions can be accepted only by a unanimous vote. Other matters will be decided by a majority of votes. In case of a tie vote, the Chair casts the deciding vote.**
6. **Each Partner Institution that takes the lead in each thematic subject will submit an annual Plan of Cooperation to the Task Force. This Plan will comprise the strategy and policy for the coming calendar year as well as information on specific activities. The Task Force will draft a general Plan of Operations (including a budget) for the coming year with an overview of the individual Plans of Cooperation. The Plan of Operations will be discussed and agreed upon by the ELLS Board during their meeting at the beginning of each calendar year. It is also possible to begin new activities that have not been specified in the Plan of Operations. The Task Force will coordinate the approval procedures for such activities.**

### **Article 4 - Position in Higher Education**

1. **The ELLS Chair is responsible for developing and maintaining relations with other inter-university networks and international bodies.**
2. **ELLS Chair is authorised to sign Memoranda of Understanding or Letters of Intent with other university networks if they have been agreed upon by the other members. Such documents must be signed by all ELLS Partner Institutions.**
3. **The ELLS Partner Institutions shall establish an ELLS Consortium with the aim of making agreements with other consortia and funding agencies, sharing resources and offering joint programmes to third parties.**
4. **Participation in the ELLS Consortium will not preclude the ELLS Partner Institutions from making bilateral agreements or taking part in other consortia.**



#### Article 5 – Finance

1. Each activity or project of the Euro League will be regarded in financial terms as a separate activity. This means that for each activity or project, a project plan with a proposed budget will be submitted to the Task Force. Each Partner Institution is responsible for its own financial contribution.
2. The Chair can incur expenses up to €5000 annually for activities that are in the general interest of ELLS. These expenses will be reimbursed during the following year. Each Partner Institution is responsible for an equal share of these expenses. In case of activities that incur expenses higher than €5000, the Task Force must approve such expenditures in advance.
3. All expenses for travel/hotels/salaries will be paid by the Partner Institution which employs the members of staff who incur such expenses. Funding of such expenses from external sources is permissible.
4. The Plans of Cooperation shall incorporate a budget based on the total costs for each Partner Institution. The Partner Institutions are not liable in any way for costs incurred by other Partner Institutions who do not fulfil their financial obligations.
5. No tuition fees shall be charged to exchange students of ELLS Partner Institutions or those of external partners in the ELLS Consortium (the tuition fee will be paid at the home university) if such an agreement with the external partners has been made. If a student wants to follow an entire Master Programme at another Partner Institution, then the normal tuition fee will be charged. European regulations shall apply.
6. The home universities of students shall provide the necessary funds for travel/lodging to assure the participation of at least two students from their university in the annual meeting of student representation group.
7. The home university shall provide the necessary funds for travel/lodging to assure the participation of the two student representatives in the Task Force meetings.

#### Article 6 – Enlarging the ELLS network

1. The ELLS Board makes the final decision about the acceptance of new ELLS Partner Institutions.
2. The maximum number of Partner Institutions in the ELLS network will not exceed nine.
3. New Partner Institutions are required to meet the conditions of the prevailing ELLS MOU, in particular the conditions for the ELLS Quality Assurance System.

#### Article 7 – Quality Assurance System/quality enhancement

1. The ELLS Partner Institutions shall establish a Quality Assurance System for the ELLS network. The ELLS Quality Assurance System shall also aim for quality enhancement.
2. The ELLS Quality Assurance System is based on the national systems of the individual ELLS Partner Institutions.
3. Experts from Euro League universities can participate in a Quality Assurance Panel. This Panel will visit ELLS Partner Institutions for the purposes of comparison and evaluation of courses or programmes.
4. All Partner Institutions agree to submit to the ELLS Quality Assurance System. Before the evaluation will be carried out, all procedures, goals and other relevant aspects must be **decided upon**.

#### Article 8 – Joint Programmes/degrees

1. The Partner Institutions agree that the duration of a Bachelor Programme must be at least three years and that of a Master Programme at least one year.
2. Students can complete a BSc Programme at one ELLS university and continue on to an MSc Programme at another if accepted by the host university.
3. Students of ELLS universities can opt for a Euro League Certificate (ELC) which will be issued by the students' home university. To obtain such a Certificate, students need to acquire at least 30 ECTS. Modules or activities which are part of the ELC have to be acknowledged in advance by the teaching staff of the home university.

#### **Article 9 – Euro League Student Association**

1. **The Student representation in ELLS is organised through the Euro League Student Association (ELSA).**
2. **At least two student representatives from each Partner Institution shall be nominated. The student representatives will meet at least once a year.**
3. **The ELSA Chair and the Chair of the ELLS Task force will come from different universities.**
4. **ELSA will be represented at meetings of the ELLS Board and at meetings of the ELLS Task force by two ELSA representatives and by one representative of the university where the meeting is held. ELSA has one vote on the ELLS Board and two votes on the ELLS Task force (see Article 3.5).**
5. **The costs for travel and accommodation for the aforesaid meetings will be reimbursed by the home universities of the representatives. For the meetings of the student representatives, each university will reimburse the expenses of at least two students.**

#### **Article 10 – General Provisions**

1. **The participating universities agree to acknowledge credits (representing course magnitude) that have been received by students from Partner Institutions, assuming that such courses are compatible with the students' study programme. In situations where the number of credits does not conform to a particular university's system, the home university will find a solution fitting in the credit system of that particular university.**
2. **The Partner Institutions accept English as the language of instruction for any joint programmes. If the Partner Institutions jointly develop new study programmes or parts thereof, the language of instruction will be English.**
3. **The intellectual property resulting from joint programmes and research belongs to the universities that conduct the joint programmes/research. If necessary, for each project specific arrangements will be worked out in a separate agreement.**
4. **Activities of each university are carried out in compliance with the national laws prevailing in that particular university's country.**

**University of Aberdeen, United Kingdom**

**On behalf of Prof C. Duncan RICE, Principal and Vice Chancellor, Prof. Paul MITCHELL, Head of the School of Resources, Environment and Society**

**Universität für Bodenkultur Wien, Austria**

**On behalf of Prof. Dr. Leopold MÄRZ, Rector Magnificus, The Dean of Studies, Prof. Dr. Adolf ZAUSSINGER**

**Universität Hohenheim, Germany**

**Prof. Dr. Hans-Peter LIEBIG, Rector**

**The Royal Veterinary and Agricultural University, Denmark**

**Prof. Per HOLTEN-ANDERSEN, Rector**

**Swedish University of Agricultural Sciences, Sweden**

**Prof. Ann-Christin BYLUND, Rector**

**Wageningen University, the Netherlands**

**Prof. Dr. Ir. L. SPEELMAN, Rector**

**With the support of the Euro League Student Association**

**Anna Marina Neuburger, Chair of ELSA**

## **1<sup>st</sup> Amendment to the Memorandum of Understanding (MOU)**

as decided on the ELLS Board meeting on 14 November 2003 at Stuttgart-Hohenheim

The Euro League for Life Sciences is a framework of cooperation between

1. Universität für Bodenkultur Wien, Austria
2. Universität Hohenheim, Germany
3. The Royal Veterinary and Agricultural University, Denmark
4. Swedish University of Agricultural Sciences, Sweden
5. Wageningen University, the Netherlands

### **Article 3 – Internal organisation**

- Ad 4. The duration of the ELLS chair is prolonged from 1 to 3 years. The host institution for the ELLS Board meeting will change every year.



# **Policy Document**

(November 2003)

## **Policy document**

The purpose of this document is to develop short and long-term perspectives for the Euro League for Life Sciences. These perspectives are based on the Memorandum of Understanding and the experiences gained from practical implementation of ELLS, since the signing of the letter of intent in September 2001.

### **Introduction**

The Euro League for Life Sciences (ELLS) is a network of leading universities cooperating in the fields of Natural Resource Management, Agricultural and Forestry Sciences, Life Sciences, Veterinary Sciences, Food Sciences, and Environmental Sciences.

Presently the ELLS network includes the following members:

- 1 The Royal Veterinary and Agricultural University (KVL), Copenhagen, Denmark
- 2 University of Hohenheim (UHOH), Stuttgart, Germany
- 3 Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden
- 4 University of Natural Resources and Applied Life Sciences (BOKU), Vienna, Austria
- 5 Wageningen University and Research Centre (WUR), Wageningen, The Netherlands

The network will be open for participation of new members, but at the present stage, the priority is on establishing cooperative activities and common strategies, rather than the extension of membership. This view is supported by the experiences made so far in the realisation process of ELLS activities.

### **Objectives of ELLS**

The focus of ELLS is on joint teaching and learning, student and staff mobility, and quality assurance. These activities will result in highly qualified graduates, who are prepared for the demands of the European and international market. Furthermore, through the sharing of expertise and resources, this network will enhance the national and international position and potential of all partner universities, as part of the development and implementation of their degree programmes.

The objectives of ELLS are:

- to offer students additional values by expanding existing activities and by developing new joint programmes in the field of Life Sciences
- to support the high quality of education by the sharing of expertise and facilities
- to provide transparent and easily accessible information about joint ELLS study programmes
- to increase student mobility by simplifying the process of student exchange.

### **Achievement of Objectives**

These objectives will be achieved by the following measures:

#### **Offering joint study programmes**

Individual Subject Areas in the ELLS network are responsible for the development of joint teaching programmes. Their work is of utmost significance for the progress of ELLS.

There are three types of joint study programmes:

##### **1 Use of existing study programmes**

Students can make use of modules of already existing study programmes at another ELLS university. While at another ELLS university, students can either study the same module as offered at their home university, or they can supplement their curricula by taking additional

courses not offered by the home university. Prerequisites are the application of ECTS and the mutual recognition of the courses.

This way of exchange does not differ greatly from other existing exchange programmes. The aim of ELLS, however, is to simplify the exchange procedure in regard to easy accessibility of the study programmes, advice and course guidance, mutual recognition of courses, introductory programmes (e.g. language courses, get-togethers), and convenient placement in housing. The use of existing study programmes is the most rapid way to start student exchanges within the network.

## 2 *Joint short-term study programmes*

One characteristic for this kind of activity is that a special scientific topic is covered by lecturers from several ELLS universities. By sharing expertise and facilities and with the participation of highly motivated students, the high quality of such courses is ensured. The courses are blocked in order to enable the participation of students from all ELLS universities. One example for such short-term study programmes is the “summer university”, which may rotate between ELLS universities. Other examples are projects which utilise modern information and communication technologies, such as the LAT (Learning Apart Together) project as well as regional and global seminars.

Joint short-term study programmes are essential components for the enhancement of existing programmes. They can be organised in a relatively short time and offer the opportunity to tackle new scientific topics immediately. Summer universities may be integrated in regular studies.

## 3 *Joint curricula and joint Master programmes*

A central focus of the ELLS network has to be on the development of joint curricula and joint Master programmes. There are many organisational models which may lead either to an ELLS certificate, double degrees or joint degrees. At the moment ELLS is considering two models:

- a) A model already in the process of development by the Subject Areas is the establishment of a joint Master programme by at least two universities. The study programmes are joint programmes from the beginning, and they may be derived either from combining resources of existing programmes or from planning completely new Master programmes. They are designed in such a way that students can easily study one or more semesters at the other ELLS universities.
- b) A long-term perspective for ELLS is the development of new joint Master programmes on future-oriented topics, in which the involved universities are contributing to different parts of the study programme. None of the universities will offer the full course programme alone, requiring students to spend substantial study periods at different universities. This is the most ideal way to share expertise and facilities of the partner universities.

The focus of the ELLS network is on the second and third type of joint study programmes. Only minor obstacles exist for the implementation of joint short-term study programmes. In contrast, joint curricula and joint Master programmes require meticulous and more time-consuming adjustment due to differences in national study systems. Furthermore, in some countries the implementation of joint degrees is still limited by legal constraints. Nevertheless, it is strongly believed that the creation of a European Higher Education Area will overcome these problems. The ELLS network will contribute to this process.

## **Sharing of expertise and facilities**

In order to provide the best quality of study courses possible, sharing of expertise and facilities is recognised as a basic principle of the ELLS network. Student and staff mobility, as well as the use of information and communication technologies, are crucial requirements for functioning effectively as a network. The sharing of expertise and facilities also contributes to a more economic use of resources.

## **Making information accessible**

In order to attract students, information about the study programmes of the ELLS partner universities must be easily accessible, clearly structured, and instructive. This is achieved by the establishment of a central ELLS website (<http://www.euroleague-study.org>), by the dissemination of ELLS activities within the individual ELLS universities by Task Force members, International Relation Officers, Subject Area representatives and ELSA, and by the distribution of information brochures.

## **Simplifying student exchange**

ELLS is successful if study abroad opportunities are readily available for all students throughout the network. Therefore, it is fundamental to focus on the removal of obstacles to student mobility. Within ELLS, International Relation Officers provide as much guidance as possible, and they work together to overcome these obstacles.

It is essential that all types of joint study programmes guarantee the mutual recognition of courses and the use of a uniform credit system, e.g. the ECTS system. Grants and scholarships are necessary to cover the students' extra expenditure for staying abroad. Each ELLS university provides a minimum of five scholarships for outgoing students. At the moment, housing for incoming students is the most crucial problem. There must be an assurance of appropriate accommodation for incoming students at all ELLS universities.

To ease integration of incoming students, ELLS universities offer language courses and general introductory seminars to familiarise students with university facilities.

## **Quality enhancement, quality assurance, and benchmarking**

Permanent efforts to enhance the quality of study programs are a prerequisite when ELLS is to compete with other universities on a national and international level in the field of Life Sciences. The high quality of study programmes must be assured by internal and external evaluation systems. However, quality enhancement, quality assurance, and benchmarking must not be restricted to teaching or to the content of the joint study programmes, but it must be extended to include administration, flow and accessibility of information, student exchange procedures, and student accommodation, as well.

## **Interaction with other partner networks**

To maintain a strong position in the European Higher Education Area and to increase the interest and added value for students and staff, ELLS is looking for strong strategic partners that extend the ambition and aims of the network. For this reason, ELLS is reviewing the possibilities for cooperation with other education networks in Europe and North American (NA) universities. These universities will act as "natural partners" to the individual ELLS members.

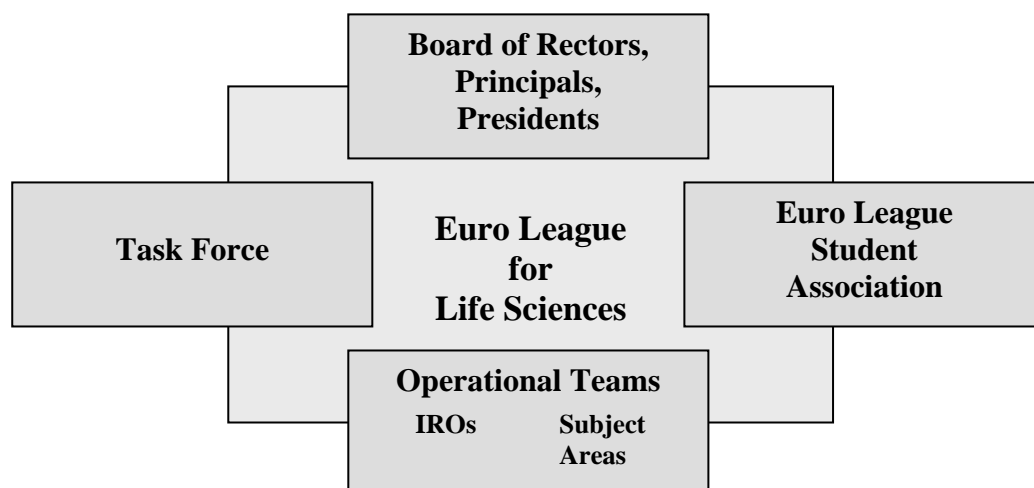


## Contribution to the future of Higher Education in Europe

By combining forces and reacting to the current changes in European Higher Education, ELLS aims to contribute to discussions on the future of Higher Education in Europe. These issues include, among others, the comparability of degrees, the link between education and research, the financing of education, and the communication of the significance of academic education to society.

### Mode of Action

The structure of the ELLS network guarantees an effective cooperation, within and between the partner institutions, from the student level to the university administration level.



#### **Board of Rectors, Principals, Presidents**

- decision making body, meets once a year

#### **Task Force**

- consists of one representative of each university, meets at least twice a year
- coordinates ELLS activities
- develops strategy and policy issues
- communicates the activities of the network on university, national, and international levels

#### **Chair and secretariat**

- is held by one of the ELLS universities, rotates annually between ELLS universities
- the Chair presides over the Board and the Task Force, the secretariat is in charge of organisation and administration of ELLS activities

#### **Euro League Student Association (ELSA)**

- consists of at least two students of each university, meets twice a year
- participates in meetings of all organisational levels; has one vote on the ELLS Board and two votes on the Task Force

#### **Operational teams - Subject Areas (SA) and International Relation Officers (IRO)**

- each partner institution has the responsibility for at least one Subject Area and oversees the development and implementation of joint curricula or other teaching activities
- the IROs support the network in relation to student and staff mobility, mutual recognition of study programmes, scholarships, and fund raising.

Policy lines are substantiated in an annual Plan of Operation coordinated by the Task Force. The bases of this Plan of Operation are the activity plans compiled by each ELLS university and ELSA. The Plan of Operation, which must be agreed upon by the ELLS Board, shall comprise concrete time schedules and tangible goals. This Plan will also prioritise the measures needed in order to reach the objectives.



## **Guideline for Subject Areas<sup>1</sup>**

### **Subject Areas – Definition**

ELLS joint study activities are developed and implemented by the Subject Areas that concentrate on a thematic subject. For each ELLS Subject Area a lead university is designated with the responsibility of coordinating the jointly developed activities. The leading institution appoints an academic Subject Area coordinator with the responsibility of:

- identifying relevant partners and establishing the academic contact network
- planning of Subject Area meetings
- coordination of joint activities including preparation of a joint concept with annual activity plans
- presentation of the activity plan and the achieved progress at the annual meeting of Board, Task Force and Subject Area coordinators
- internal dissemination of network related information and
- involvement of colleagues in SA projects.

### **Criteria for approval of Subject Areas**

- 1** Societal relevance, European dimensions – Contribution to the ELLS ambition to spearhead the European Education and Research Area
- 2** Attractiveness for students/effective in stimulating students' mobility/better chances on the labour market for the graduates
- 3** Educational need: Important field of knowledge/innovative/interdisciplinary field
- 4** Participation of at least 3 ELLS universities, accepted by the involved faculties
- 5** Academic merit/availability of expertise
- 6** Added value: Complementing competence, improvement of the quality of education of the ELLS partners
- 7** Operational efficiency of the SUBJECT AREA: functional network, clear leadership, joint concept with clearly defined short- and long-term goals including a timeline with stipulated and achievable milestones
- 8** Mutual recognition of ELLS study courses by all ELLS universities, no extension of study period

---

<sup>1</sup> As approved by the ELLS Board in May 2004

## **Formation process of Subject Areas – a stepwise procedure**

The development of a Subject Area has to be considered as a step-by-step process, where each step should be monitored for achievement/success. The step-by-step development of Subject Areas should be encouraged as opposed to over-ambitious action plans.

### **1. Proposal of a Subject Area**

Establishment of Subject Area groups is based on common interest expressed by the ELLS institutions. A bottom-up approach is preferred and proposals for new Subject Areas should primarily come from the departmental level. For the initiation of a new Subject Area, all criteria should be basically met. The coordinating ELLS university and the coordinator must be nominated.

### **2. Preliminary approval by the Task Force**

If the Task Force agrees on the potential feasibility of a new Subject Area and gives its preliminary approval, a one-year pilot phase is started.

### **3. Pilot phase**

During the one-year pilot phase funds for financial support (travel expenses) will be provided for the meetings necessary to develop an efficient network and a joint action plan. There is no general rule for the development of a Subject Area (there must be “many ways to Rome”); in principle, all three types of joint study programmes as listed in the ELLS policy document are possible.

### **4. Final Approval as ELLS Subject Area**

Upon the pilot phase, the Task Force checks whether the Subject Area entirely meets the criteria listed above. After successful evaluation by the Task Force, the Task Force recommends the Subject Area for final approval by the Board. Approved Subject Areas will receive a budget to realise the proposed activities. Specific incentives for Subject Areas with particular success are being discussed.

Subject Areas which do not present concrete results after a pilot phase of one year are not further supported and will be terminated.

### **5. Responsibilities of the Subject Areas**

The Subject Area coordinators will submit an annual report to the Task Force with information on the achieved progress and an activity plan for the following year. This activity report must include concrete milestones, time lines and identified responsible anchor persons for each milestone as well as a budget proposal. On the basis of these reports the Task Force prepares an annual ELLS Plan of Operation including a budget for the coming year. This Plan of Operation will be discussed at an annual meeting of the Board, the Task Force and the Subject Area coordinators. The Board evaluates whether the goals of the past year were achieved and decides on the activities to be supported and financed during the next year.



## Euro League for Life Sciences

The Euro League for Life Sciences (ELLS) is a network of leading universities cooperating in the fields of Natural Resource Management, Agricultural and Forestry Sciences, Life Sciences, Veterinary Sciences, Food Sciences, and Environmental Sciences.

Presently the ELLS network includes the following members:

- The Royal Veterinary and Agricultural University (KVL), Copenhagen, Denmark
- University of Hohenheim (UHOH), Stuttgart, Germany
- Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden
- University of Natural Resources and Applied Life Sciences (BOKU), Vienna, Austria
- Wageningen University and Research Centre (WUR), Wageningen, The Netherlands

### Objectives of ELLS

The focus of ELLS is on joint teaching and learning, student and staff mobility, and quality assurance. These activities will result in highly qualified graduates, who are prepared for the demands of the European and international market. Furthermore, through the sharing of expertise and resources, this network will enhance the national and international position and potential of all partner universities, as part of the development and implementation of their degree programmes.

The objectives of ELLS are:

- to offer students additional values by expanding existing activities and by developing new joint programmes in the field of Life Sciences
- to support the high quality of education by the sharing of expertise and facilities
- to provide transparent and easily accessible information about joint ELLS study programmes
- to increase student mobility by simplifying the process of student exchange.

Please visit our website: <http://www.euroleague-study.org>