

Forestry education at university level, qualifying for the job

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1. Regulatory Framework

All German universities and universities of applied Science (Fachhochschulen) reform their study courses

In Tharandt the regulatory framework is formed by:

- Bologna-Process, agreement of the Ministers
- Documents from KMK (Conference of Ministers of Education), HRK (German Rectors' Conference), SMWK (Saxonian Ministry of Education)
- University Commission for education/ academic senate (Rektoratskollegium)
- Deans of Students (degree coordinators) of Faculty of Forest, Geo and Hydro Sciences

The needed basics and standards like CNW, duration of courses, ECTS-points, accreditation, financing etc. are specified by this institutions.

Forest specific framework

- SILVA/IUFRO conferences
- bilateral arrangements (e.g. ERASMUS)
- Forstlicher Fakultätentag (German Forest Departments/Faculties)

By 01.10.2006 all German forest universities offered the bachelor degree.

All locations provide several master courses (in Tharandt e.g. Tropical Forestry and Management). „MSc. Forestry“ according to the new guidelines is only available in Göttingen. Freising and Freiburg will establish MSc programmes in October 2008, Tharandt in October 2009.

2. Bachelor as vocational qualification

- The terms „qualification and competence“ are crucial in the process of reforming courses of studies according to the Bologna process. One of the reasons is the requirement of the bachelor degree to impart a vocational qualification („ready for the job“ in this case means „ready for the labour market“).
- A second reason is the increasing ‚qualification oriented‘ communication with the labour market instead of the former ‚certificate or degree oriented‘ communication. The placement of alumnis (BSc and MSc) in the labour market will be easier if the employers know what qualifications the alumnis have.

Qualification and competence

The consequences of this conception oriented by qualification and competence for teaching at universities are:

- Teaching based on areas of knowledge is no longer the principal concept, rather is the qualification of the student focussed on.
- The complexity of the courses (and within) is to give an idea of the complexity of professional life.
- The clearly required proportion of general (vocational/scientific) competence is to be taught in addition to the previous expertise and necessitates an adaptation by respective teaching events/forms of learning.
- It is not only the individual university lecturer who decides about the knowledge to be taught for his subject (including methods), the proof is needed that the course contents and forms of teaching are successful in terms of the objective of qualification.
- The fact whether the curricula meet these expectations is regularly tested by accreditation and evaluation.

Structure of the study

- The consecutive study is interpreted in that way that first of all the comprehension of the course-specific problems is interpreted and trained for the specific complexity (Bachelor) and, based on this, a deepening in the specialist disciplines is obtained (Master).
- The subdivision of the study into the first semester teaching the „basics“ and subsequent semesters offering „applied subjects“ is largely abolished. Hence, the path to the Master study has been opened up for the „basics“; here profundity can be attained with students, who have already acquired the full context of forest sciences. In the Bachelor study the teaching contents of the „basics“ have to be adapted to the new requirements.
- On the other hand, the „applied subjects“ are also integrated in the first semesters. They should be reasonably linked in an interdisciplinary fashion with the „basics“ being absolutely necessary for them.

Amongst others, the vocational qualification of the bachelor is ensured by the fact, that the students are enabled to solve complex problems and to approach their solutions flexibly.

Interdisciplinary teaching events are to promote the ability to linking-up different disciplines. They provide an opportunity to train how to handle forest-specific complexity.

Bachelor Certificate and Professional Qualification

- The term „vocational qualification“ tends to be interpreted as „the ability to be successful in labour market “.
- No vocational qualification „ready for studying in the Master course“ does exist, hence also at universities concepts have to be designed informing about the purpose of the bachelor certificate for the labour market.
- This is the more necessary, because for the Master course entry requirements have to be formulated and not all bachelor graduates will meet these requirements. Thus, a new responsibility results for the universities.
- The Bachelor certificate does not compare with German Fachhochschulabschluss (restricted university entry qualification, i.e. college certificate). This is a regulation for transitional periods.
The Bachelor is a new certificate for Germany, which has to be developed as for its contents.

3. “Aquas” (soft skills) in German **allgemeine Qualifikationen**

- The study is to enable a polyvalent qualification; a certain proportion of free planning is to yield a curriculum featuring also individuality.
- Besides broad specialist knowledge also explicit general qualifications such as competence in communication and the ability to independent scientific working and learning are to be conveyed.
- The professional qualification of Bachelor is also to be guaranteed by the fact, that the students are trained so as to be enabled to solve complex problems and to be flexible when tackling the tasks (linking-up different disciplines).
- The idea behind the consecutive study is to first of all create an understanding for specific issues and specialist complexity (Bachelor), in order to attain on this basis scientific specialisation (Master).

Classes/modules teaching soft skills

- English
- information technology
- social competence
- scientific working
- communication skills
- In all modules soft skills are taught based on various forms of learning.

Dublin descriptors

- The **joint quality initiative** is an informal network for quality assurance and accreditation of bachelor and master programs in Europe.
It stems from the Bologna declaration (1999) in which European ministers of Education committed themselves, among other things, to adopt a higher education system essentially based on two main cycles.

Conveying competence in education

Dublin Descriptors for BSc.:

- have demonstrated knowledge and understanding in a field of study that builds upon and supersedes their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;
- can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study;
- have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues;
- can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;
- have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

Conveying competence in education

for MSc.:

- have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context; can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
- have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
- can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;
- have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

Conveying competence in education

The differences are:

knowledge and understanding

- .. *from* .. advanced textbook level + .. *to* .. extended / enhanced knowledge and understanding that provide a basis or opportunity for originality in developing or applying ideas .. often in a research context ... ;

applying knowledge and understanding

- .. *from* .. devising and sustaining arguments .. *to* .. problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts .. ;

making judgements

- .. *from* .. gathering and interpreting relevant data .. *to* .. having the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete data .. ;

communication

- .. *from* .. can communicate information, ideas problems and solutions .. *to* .. can communicate their conclusions and the underpinning knowledge and rationale under;

learning skills

- .. *from* .. have developed those skills needed to study further with a high level of autonomy .. *to* .. studying in a manner that may be largely self-directed or autonomous.

Requirements and problem solving

Vocational qualification of BSc.	↔	Linking applied/basics in multivalent classes/modules, communication and learning explicitly addressed
Unclear development in the labour market	↔	Increasing flexibility by competent learning; Opportunities for specialisation in the Master program; effect towards outside (labour market) due to advisory council
Diffuse studying behaviour	↔	Early complexity of the teaching events contribute to impart a correct idea of the profession; examination performances indicate success or failure
Interferences (redundancies) in teaching events	↔	Communication between university lecturers regarding consistency necessary anyway
Differences as to the capacity utilization rate	↔	Offered teaching events and the overall concept result in new proportions

4. Advisory council for the program

- The necessary study contents have been discussed with the advisory council
- Hearing of 12 representatives from practice
 - Forestry and forest administration
 - Landscape and environmental protection, nature conservation
 - Forestry service provider in the broader sense and entrepreneurs
 - International suppliers, social groups
 - Research and third party funds sectors
- In the future, the advisory council can
 - arrange partnerships with enterprises/institutions (practical training/start for the professional life)
 - accompany evaluations
 - improve the attractiveness/efficiency of Tharandt as place of study, by purposeful external and internal work

Advisory council

- Developing of the curriculum is (and was) accompanied by an advisory council; we have appointed the advisory council with a four-year working term starting in February 2007 (unique at TU Dresden), its members are:
- Prof. Dr. H. Braun (Manager of the state-owned enterprise Sachsenforst) *forest administration*
- M. Funk (Manager of Zellstoff Stendal GmbH) *wood industry*
- P. Gaffert (Head of National Park Office Kellerwald-Edersee)
- Dr. J. Hess (Gesellschaft für Technische Zusammenarbeit) *international cooperation enterprise for sustainable development*
- R. Pollmeier (Manager of Pollmeier Massivholz GmbH) *saw mill*
- Dr. M. Sachse (Manager of the Sächsischer Forstunternehmerverband) *alliance of forest entrepreneurs*
- PD Dr. U. Seeling (Manageress of KWF) *technical and scientific support to German forestry*
- Dr. R. Stock (departmental chief „Nature Conservation“ of Deutsche Bundesstiftung Umwelt)

5. Problems

- Students:
 - Workload of the students too high? (Bologna 22.5 weeks, Tharandt 15 weeks)
 - The self-studies based on too many topics?
 - Attendance studies (per class/module) exceeding 4 hours per week per semester?
 - Group size in the modules not adapted to the form of teaching?
 - No interdisciplinary examinations in an interdisciplinary module?
- University lecturers:
 - Has the module been placed correctly in the curriculum?
Interdisciplinarity causes some kind of confusion
 - Can the basics be relied on appropriately (chemistry, physics)?

6. Connection to Master

- Normally students graduate with the Master Degree.
- Opening of the Master course to basic subjects.
- The Master course allows to convey to the students, who are already in a position to understand the problems in a complex manner and scientific depth.

Thanks for your attention!



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