

## TU9 on the Bologna Process

### Ten years of the “Bologna” Declaration - A review by the German Institutes of Technology of TU9 and ARGE TU/TH with recommendations for ‘Bologna 2020’

*The Bologna Process launched in 1999 has played its part in the modernisation of the German universities. The German universities in TU9 and ARGE TU/TH have always considered the ‘Bologna Process’ as a chance to improve the quality of their courses within the structure of the academic reform, as well as a chance to enhance the employability of their graduates and to reduce the length of their studies.*

*The ten-year existence of the ‘Bologna Declaration’ also provides an occasion to analyse whether the set objectives have been achieved with the chosen measures. The German Institutes of Technology in TU9 and ARGE TU/TH review the status quo and give recommendations as to how a European Higher Education Area can be created by 2020:*

*The TU9 and ARGE TU/TH universities would welcome the introduction of optional pre-engineering schools in Germany for those interested in studying engineering, to prepare students for their studies. They could take place in the time between school and university. These pre-engineering schools could prepare prospective students for the challenges of studying engineering and help them to close potential knowledge gaps before embarking on their studies.*

*The universities reiterate their position that there should not be a state-controlled quota system for the transition from the first to the second cycle (bachelor’s to master’s). The admission to master’s courses must be regulated solely by the professional competence of the universities according to certain quality criteria. Universities must be free and autonomous in their decision making.*

*The German Institutes of Technology welcome the development of structured doctoral training, and are already actively implementing this. At the same time, a variety of paths to doctoral degrees must continue to exist. The doctorate, especially in engineering and natural sciences, must not be reduced to school-based learning.*

*The members of TU9 and ARGE TU/TH call for the ‘Bologna Process’ to be continued single-mindedly and effectively. Since key objectives -- such as increasing the mobility of students --*

*have not yet been achieved, it is essential that we do not to come to a standstill halfway to success.*

### **Ten Years of Bologna: Objectives, Measures and Results**

The central objective of the ‘Bologna Declaration’ was the establishment of a European Higher Education Area. Study courses were to become internationally compatible, and movement within the European labour market made easier. In detail, the Bologna Process was meant to support the mobility, the international competitiveness and the employability of graduates. This was to be achieved through several measures:

#### **Bologna-Objective: Introduction of a system of easily understandable and comparable degrees also by means of the introduction of the Diploma Supplement**

‘The Diploma Supplement, as additional information to the official documents about university degrees, ought to facilitate and improve the evaluation and assessment of academic degrees both internationally and nationally for study and working purposes.’ (Bologna Declaration)

#### **Recommendation of ARGE TU/TH and TU9**

The Diploma Supplement can be a useful tool for describing university degrees and associated qualifications. The requirement for this is that it contains information about the desired learning outcomes. This is an indispensable instrument for an internationally transparent documentation of the qualifications and skills relevant to the labour market.

#### **Bologna-Objective: Introduction of a system which mainly rests upon two main cycles: one cycle up to the first degree (undergraduate) and one following the first degree (graduate)**

‘A prerequisite for the admission to the second cycle is the successful completion of the first study cycle, which lasts for at least three years. The degree earned after the first cycle certifies the first level of qualification, relevant to the European labour market.’ (Bologna Declaration)

## **Recommendation of ARGE TU/TH and TU9**

The bachelor's degree in engineering from a technical university is the gateway to a master's course in the same or a similar subject at German or international universities; in other words it is a mobility interface. It cannot and should not replace the existing university degree 'Diplom Ingenieur' in terms of the knowledge and skills acquired. The German Institutes of Technology welcome the fact that the bachelor's degree offers an interface for orientation to the students. However, the degree equivalent to the 'Diplom-Ingenieur' continues to be the master's degree. It must be emphasized in this context that the German Institutes of Technology have the mandate to train research and innovation-oriented engineers. Within the master's phase at a technical university, students learn through taking part in research projects. Here they are introduced to the characteristic manner of working of a university engineer. This includes the application of scientific knowledge and methods to the analysis of complex technical problems and to the development of innovative products and systems.

The German Institutes of Technology must have the right to certify on their degree certificates or on the Diploma Supplement of the master's degree that the degrees awarded by them are equivalent to 'Dipl.Ing'. Furthermore, it must be stated that the comparability of bachelor's and master's degrees still needs to be improved at European level.

The members of TU9 and ARGE TU/TH reiterate their position that there should not be a state-controlled quota system for the transition from the first to the second cycle (bachelor's to master's). The admission to master's courses must be regulated solely by the professional competence of the universities according to certain quality criteria. Universities must be free and autonomous in their decision making.

## **Bologna-Objective: Introduction of a Credit Transfer System (ECTS)**

### **Recommendation of ARGE TU/TH and TU9**

The European Credit Transfer System has facilitated the assessment of the workload of students and with it the recognition and transfer of academic achievements. However, in practice it can be difficult to compare the individual modules of different universities. This aspect needs to be further improved.

## **Bologna-Objective: Promotion of Mobility and European Dimensions**

### **Recommendation of ARGE TU/TH and TU9**

Unfortunately, the mobility of German students studying for bachelor's degrees compared with those in traditional courses has declined.

Surveys have revealed that students have difficulties concerning the recognition of their credit points and fear a possible prolongation of their studies. Changing universities during the bachelor's phase within one subject apparently still causes major problems.

National and international mobility must be increased and obstacles removed, in the spirit of the Bologna-Objective. TU9 and ARGE TU/TH are committed to making a contribution here: a successful concept means introducing more integrated courses, which are offered in cooperation between German and international institutes of technology. Furthermore, the universities and their organisations must support solutions at national and international level e.g. through the development of a practical and transparent system of recognition.

As one contribution to a clarification of terms, the Institutes of Technology in TU9 and ARGE TU/TH recommend that the following definitions are used:

A Joint Degree (=Dual Degree) is documented by one certificate. In the case of a joint course this certificate is signed by several partner universities. This also applies to the doctoral degree (e.g. with a Thèse en cotutelle).

A Double Degree, in the sense of a joint study programme, is documented by two certificates according to the criteria of each university.

## **Bologna-Objective: Doctoral phase as a ‘Third Cycle’**

### **Recommendation of ARGE TU/TH and TU9**

The German Institutes of Technology welcome the development of structured doctoral training and are already actively implementing this. At the same time, a variety of paths to doctoral degrees must continue to exist.

The doctorate, especially in engineering and natural sciences, must not be reduced to school-based learning. The speedy completion of a doctorate is an important aim for the members of TU9. The German Institutes of Technology emphasize that the doctorate should not be perceived as the third cycle of training but as a first stage of independent research activity, a preparation for an academic career as well as for a professional position in industry.

## **Bologna-Objective: Quality Assurance**

### **Recommendation of ARGE TU/TH and TU9**

Quality assurance is also a central objective of the German Institutes of Technology. In this context, it is essential to define, develop and secure quality goals.

The following statement can be made on quality assurance in the training of engineers at German institutes of technology:

The quality of a study programme (degree course) should first of all be measured by its learning outcomes.

Two features determine the quality of a study programme to a major extent: first, the quality of the qualification, characterised in particular by the long-term relevance of the acquired knowledge and skills for the respective field of work. Second, the quality of the study process,

characterised in particular by the feasibility of the study programme and the success rate of the course.

Universities must establish and continue to develop an extensive QM system. For this, suitable control procedures and principles concerning decision-making skills, responsibilities and processes must be applied.

Information on degree qualifications and the quality of study processes can be gathered e.g. from surveys conducted among graduates. To judge the quality of the study process, a continuous investigation of the course of study is a suitable measure.

In the interests of competition and profile raising, the providers of study programmes must be able to define the educational goals of their programmes, i.e. the qualification profile of the graduates, independently and as a result of a dialogue with their target group.

### **Bologna-Objective: Accreditation**

#### **Recommendation of ARGE TU/TH and TU9**

Accreditation is one method of quality assurance, although its objective is merely observance of minimum standards. Apart from the accreditation of individual study programmes, the accreditation of systems was introduced as a further means of accreditation following a resolution of the Conference of the Ministers of Education (KMK).

The German Institutes of Technology are committed to bearing responsibility for the quality of their courses. The key task of every individual university is to continue to enhance this quality in order to stay internationally competitive.

Here, an external point of view is a useful and often also necessary means of supporting self-reflection. However, this must not lead to a detailed regulation of the universities from outside. Universities must have the opportunity to design and develop the quality of their courses

according to their own profile and strategy. Freedom of choice is thus a meaningful institution and always a step in the right direction. It must however live up to the diversity of the German higher education system and not enforce wrongly perceived standardisation. Such standardisation would severely curtail the universities' efforts to offer competitive courses.

Especially the German Institutes of Technology with their courses that are particularly relevant to economic development have in the past produced graduates with an excellent reputation worldwide.

The close contact of the technical universities to industry has always guaranteed that practice-relevant topics and long-term developments have been integrated into the curriculum. This also impacts on academic education, which reaches far beyond technical and scientific subjects

In order to avoid a levelling down in higher education, effective quality assurance measures tailored to each individual institution and type of institution must be applied. Detailed and binding regulations do not lead to an enhancement of quality, but merely to an increase in bureaucracy and uniformity.

What is important to the development of the universities is that different attitudes and different ways of working can peacefully coexist. Recent quality management (QM) approaches are helping the universities to act stringently and to rise to increasingly international challenges.

Accreditation by external (also international) agencies nominated by the university must focus, among other matters, on the evaluation of the QM-system for which the university is responsible.

In accordance with the TU9 bachelor's / master's concept, a research-oriented engineer must have a master's degree. Consequently, the accreditation of consecutive university engineering courses must take the whole study programme up to a master's degree into account.

## **European Ranking**

### **Recommendations of ARGE TU/TH and TU9**

Among the general public, rankings attract a huge amount of interest. Surveys have revealed that many international students have partly or entirely taken rankings into consideration when choosing their prospective university.

Popular international rankings, however, have huge deficits: special caution must be exercised when comparing very different institutions.

Again and again, especially the technical universities experience how their specifically technical orientation is not sufficiently taken into account when indicators are defined. Here, a common catalogue of indicators must be defined at European level, particularly focussing on the orientation of technical universities and their contribution to the development of society. This would strengthen the European Higher Education Area decisively.

The members of TU9 and ARGE TU/TH recommend that a competitive situation should not consist solely of a direct comparison of different absolute parameters, but must also include a consideration of the profile and requirements of the institution in question.

## **Lowering the drop-out rate by introducing optional pre-engineering schools**

### **Recommendation of ARGE TU/TH and TU9**

The TU9 and ARGE TU/TH universities would welcome the introduction of optional pre-engineering schools in Germany for those interested in studying engineering, to prepare students for their studies. They could take place in the time between school and university. These pre-engineering schools could prepare prospective students for the challenges of studying engineering and help them to close potential knowledge gaps before embarking on their studies.

Pre-engineering schools do not absolve the universities from the duty to design courses which can be studied effectively. They would also be a useful measure to significantly lower the drop-out rate in engineering courses. Participants should be able to claim financial support, similar to the BaFöG system, as particularly in engineering courses there are many students from low-income families.

**Bologna Objectives must be implemented more effectively!**

The members of TU9 and ARGE TU/TH call for the ‘Bologna Process’ to be continued single-mindedly and effectively. Since its objectives have obviously not been completely achieved within the planned time, it is now essential that we do not come to a standstill halfway to success.