

# 독일의 공학교육

## 외국 공학교육제도 (3)

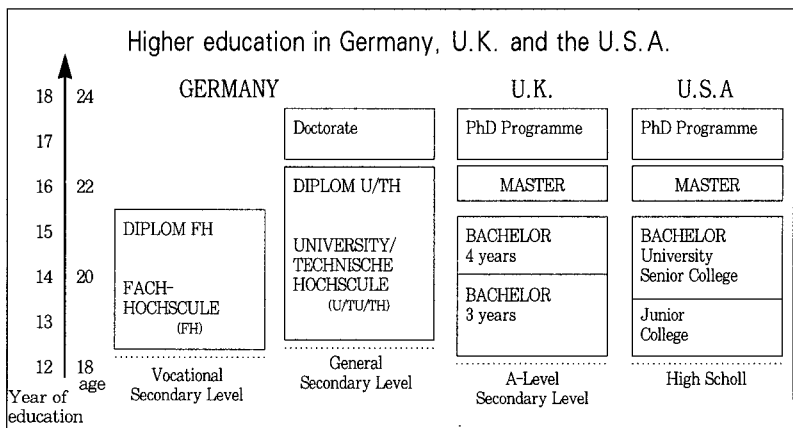
### 1. The German Higher Education System

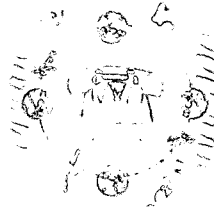
#### Types of instructions

There are in principle two types of German institutions of higher education, one being the Fachhochschule(FH) and the other being the Universität(U), Technische Hochschule(TH) or Technische Universität (TU). The Gesamthochschule(GH) links these systems in a so-called Y-model.

The academic emphasis of the FH system is on subjects from the engineering and management sector, while universities cover all areas of scientific education and research. Only the latter have the right to award doctoral degrees.

The regular programmes of the German higher education system lead to one degree only, the Diplom which, if it is awarded by a Fachhochschule(FH), ranks internationally as a bachelor or professional





master and, if it is awarded by a university or Technische Hochschule, ranks as a Master of Science degree.

The following graph compares FH and U/TU/TH and puts them in approximate relation to the British and American systems.

### Academic Freedom

Academic freedom "(Akademische Freiheit)" is the traditional ideal of the German university. It was first established at the University of Berlin by Wilhelm von Humboldt in the early 19th century, and later extended to all institutions of higher education, following a movement to realise scientific and education freedom as a principle of democracy. This involves both institutional autonomy and the individual's (whether teacher or student) fundamental right to academic individuality.

Freedom, so-called permeability (Durchlässigkeit) and flexibility were the political key words used to speed up the democratisation of the secondary school system in Germany, raising the number of school-leavers entitled to access to higher education from 6% to 35% within twenty years. Together with the absence of a selective admission system, this has led to an enormous increase in the numbers of students in all subject areas at all institutions, although the federal governments have built new schools and expanded the existing ones.

Thus high student numbers and the greatest possible liberalism - two terms that may sound contradictory - are essential characteristics of German education.

Study plans and timetables which each faculty provides for its students are only of relative value, in particular for the period of advanced studies after the intermediate examination (Zwischenprüfung, Vorexamen). In reality, very few students are ever at the same stage in their studies.

The study regulations permit considerable deviations from the regular plan in terms of timing as well as in terms of chosen courses, seminars and projects. This may lead to extraordinarily extended study careers and a considerable particularity of curricula.

German higher education does not normally have a tutorial system or fixed learning groups. Students are expected to initiate their own study teams. It is a system in which the student acts primarily as an autodidact, drawing educational benefits from



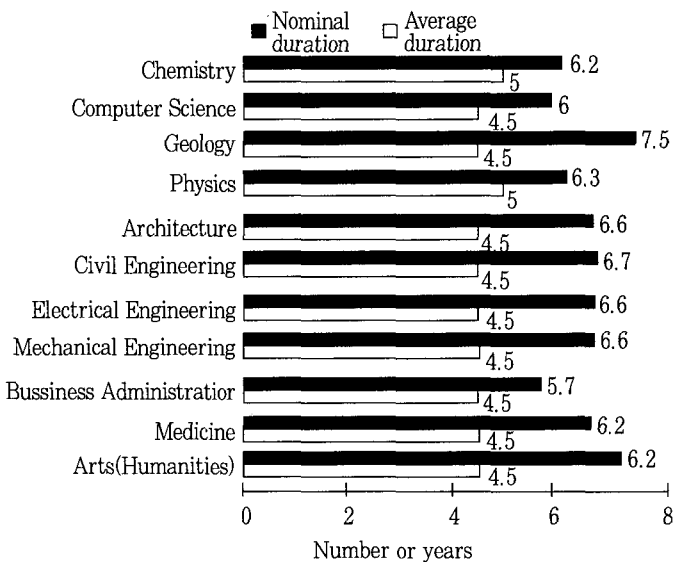
the system as he or she sees fit, of course, with a certain amount of orientation being given by assistant staff and fellow students. However the system does not actively “form” the student as is intended in the French system of formation. Students become formed by succeeding in the system, open and liberal as it is.

While attendance of lectures and tutorials is in general not compulsory, examination requirements in the form of calculations, seminar certificates, home and design work or lab reports are controlled thoroughly and the examinations themselves are subject to strict organisation and high standards. Although there is now a tendency to prescribe a more strict schedule, in particular for the phase of basic studies, students at German institutions of higher education are not usually obliged to sit an exam immediately after the semester in which they attended the particular course.

The typical professor at a German university works at a considerable remove from the students. His or her function is to run a unit(Lehrstuhl, Institut) which is engaged at once in research and in education. The professor is responsible for the management and maintenance of this unit, the development of research projects and for raising suf-

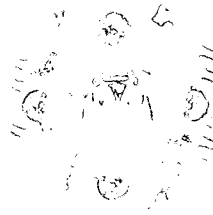


Nominal and average duration of some first degree RWTH study programmes



ficient funding. The amount of time left for communication with students is rather limited. It is mainly the advanced and postgraduate students who are able to contribute to the professor’s research work who have the opportunity to learn in personal interaction with the professor. This situation is, to some extent, different at





the Fachhochschule where research activities play a minor role. The professor at the Fachhochschule therefore has more contact with his or her students.

**Duration of studies and success rates**

The nominal duration of studies is the Regelstudienzeit which means the official minimum duration - not including practical placements in industry etc. required in some subjects. (The RWTH faculties of Mechanical and Electrical engineering just extended the duration of their study programmes to 5 years including the compulsory period of industrial internship.) This is different for the FH and for the TH/TU programmes. The average duration of studies is actually considerably longer.

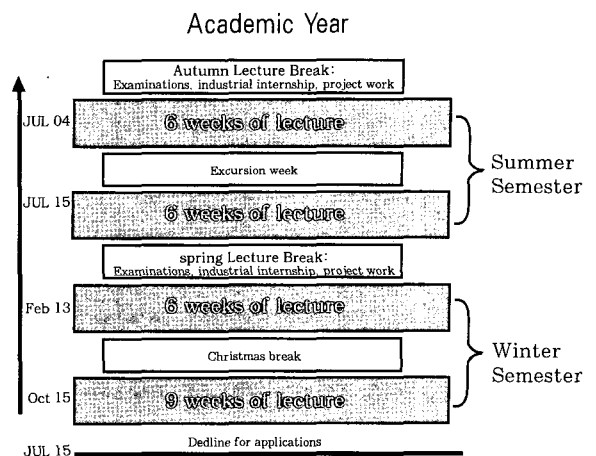
The following table displays the nominal and average duration of some RWTH study programmes.

The success rate of engineering students, for example, measured by the ratio of beginners to graduates is comparatively low at about 50%. Students who drop out tend to do so during the first two years - the basic studies or so-called Grundstudium - which thus act as a selection phase.

**2. Dates of the Academic Year**

The academic year at German universities is divided into two semesters - the Winter - semester (WS) from 1 October to 31 March and the Sommersemester (SS) from 1 April to 30 September. Each term is divided into two parts: the first, where lectures take place and the second without lectures, which students call Semesterferien.

This lecture-free part should





not be regarded as a holiday, but should be used for revision or industrial internships, for project work or examinations

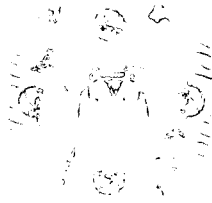
In addition to these study-related activities, most students take up some work during the Semesterferien. This applies particularly to international students who do not originate from EU countries, since they are only permitted to work during this period. Lectures start generally on 15 April in the summer term and 15 October in the winter term. You can find the exact dates in the current lecture timetable or may also ask at the international Office. Applications for admission should be submitted no less than 6 months before the intended study period, therefore 15 July is the deadline for application at the International Office if you wish to start a study programme in October and 15 January if you wish to start in July. (Most of the study programmes begin in October anyway.) The following graph shows the structure of the academic year at German universities.

### 3. Postgraduate Programmes

Many German universities have recently introduced post-graduate degree programmes in the form of taught courses in selected subject areas. The requirement for admission to these programmes is a first degree from recognised universities or equivalent institutions. The programmes lead to a second degree (usually Master) and last a maximum of two years.

The authority to award doctoral degrees is a privilege of German universities. It is carried out in the form of a pure research project and does normally not include taught courses. Doctoral projects are possible in any subject area represented by a professor. PhD programmes do not exist in the German system. Doctoral candidates pursue their project under the supervision of and in co-operation with a professor. They are not usually students, but may be employed in a full or part-time position at the university or sometimes in industry. In this case, their primary task is research in the framework of a project of their employer which will usually lead to scientific results that can be worked up to a doctoral thesis. The duration of the entire process is three to five years. A doctoral subject is mostly part of a wider research context and may, in the case of





applied research, be of relevance to industry.

Holders of scholarships from the DAAD (German Academic Exchange Service) or other national and international organisations need not be employed during their doctorate, but enrol as postgraduate students aiming at the doctoral degree.

Upon finishing the project, candidates write a thesis (Dissertation, Doktorarbeit) which they then submit to the faculty. After the thesis is accepted, they undergo an oral doctoral examination.

In principle, only holders of first university degrees are entitled to access to the doctorate. But at present a governmental directive has introduced conditional admission to the doctorate for holders of the German Fachhochschule degree who have achieved outstanding results.

As a rule the prerequisites for the admission of international graduates to doctorate are

- a master's degree from an internationally recognised university with a high grade
- written confirmation from professor that he or she is willing to accept the candidate in his or her research team

It may be the case that candidates holding an international degree are admitted to the doctorate on the condition that they take certain courses related to their field of research and pass certain exams.

In 1989 a new basis was created for doctorates in the form of the so-called Graduiertenkolleg. This is an university institution which promotes the development of scientific staff in a defined research area where "...the doctoral candidates pursue their thesis work in the framework of a systematic and interdisciplinary study programme and in joint groups of researchers who coordinate their research activities." The Graduiertenkolleg offers not only improved conditions for German and international doctorates, but also provides funding in the form of scholarships.

