

## Introduction

The German system of higher education is a binary system that consists of a university and a non-university sector. The institutions of higher education in these two sectors include all institutions (public and private) as defined in the higher education laws of the *Länder*. Each Land has its own ministry responsible for higher education. At the federal level the *Bundesministerium für Bildung und Forschung* is responsible for the implementation of the federal law on higher education (Hochschulrahmengesetzes, HRG). In 1998 in Germany 344 institutions of higher education existed.

### University sector

The university sector includes universities, technical universities, one comprehensive university (*Gesamthochschule*), colleges of education and other institutions of similar standing (e.g. colleges of medicine, colleges of theology) and colleges of art and music. They offer 4- to 5-year programmes in academic disciplines. In general, colleges of education and colleges of medicine are part of a university.

### Fachhochschulen

The non-university sector consists of *Fachhochschulen* and colleges of public administration (*Verwaltungsfachhochschulen*). *Fachhochschulen* offer highly practice-related training for occupations which require the application of scientific findings and methods of artistic ability. Above all, they offer courses in the fields of engineering, economics, social studies, agriculture and design. The study courses are shorter than in the university sector. In some *Länder*, *Fachhochschule* graduates have direct access to doctoral studies at universities. The colleges of public administration are a special type of *Fachhochschule* in which civil servants are trained for careers in the higher levels of the civil service. In table 7.1 the numbers of German institutions of higher education are presented by type.

**Table 7.1:** Number of institutions of higher education in Germany

	Total	Univ.	Compr. univ.	Colleges of education	Colleges of theology	Coll. of art and music	FH	Verwaltungs FH
1992	318	91	1	11	19	43	125	28
1993	314	87	1	8	17	44	127	30
1994	325	88	1	6	17	46	136	31
1995	326	88	1	6	17	46	138	30
1996	335	90	1	6	16	46	146	30
1997	337	90	1	6	16	46	147	31
1998	344	92	1	6	16	46	152	31

Source: Bundesministerium für Bildung und Forschung

## Input

Table 7.2 makes clear that, compared to the Netherlands, only a small part (about one fourth) of the total student population is educated at the *Fachhochschulen*. *Fachhochschulen* are usually much smaller than universities, of which some have grown to disproportional dimensions (e.g. LMU Munich with more than 60,000 students).

**Table 7.2:** Number of students by type of institution (x 1000)

	Total	Participation rate (in %) <sup>1</sup>	Universities	Colleges of Art and Music	<i>Fachhochschulen</i> <sup>2</sup>
1990	1,713	19.5	1313	28	371
1991	1,776	21.1	1350	29	396
1992	1,834	22.8	1385	29	420
1993	1,867	24.5	1397	30	440
1994	1,873	26.2	1394	30	449
1995	1,858	27.2	1380	29	449
1996	1,838	27.9	1369	29	440
1997	1,824	28.6	1357	30	437
1998	1,801	28.9	1335	30	436

Source: Bundesministerium für Bildung und Forschung

Note 1: Per cent of the population between 19 and 26.

Note 2: Including *Verwaltungsfachhochschulen*.

Access to universities (and their equivalents), in principle, is open to all those who have passed the final examination of secondary education, and have been awarded the general *Abitur* (*Algemeine Hochschulreife* or *Vollabitur*) or the *Fachgebundene Hochschulreife* (a specialised *Abitur*). Those holding the general *Abitur* degree have the right to study at any category of higher education institution, in whatever subject they want. Those who have acquired the specialised *Abitur* are only permitted entry into specified courses of study according to the specialisation of his/her *Abitur*. The *Algemeine Hochschulreife* and the *Fachgebundene Hochschulreife* are normally obtained at a *Gymnasium*. Night school courses at *Abendgymnasium* are available for those in employment, and there are day school courses for students with work experience at *Kollegs* which also lead to the general higher education entrance qualification. Additional opportunities (for those who want to study at a later age) to acquire the *Abitur* are offered in the form of the *Nichtschülerprüfung* and the *Begabtenprüfung*.

The prerequisites for admission to a *Fachhochschule* are either the *Algemeine Hochschulreife* or the *Fachgebundene Hochschulreife* and *Fachhochschulreife*. The *Fachhochschulreife* is normally acquired at a *Fachoberschule*. It is also possible, however, to obtain the *Fachhochschulreife* through special additional courses which are offered, for instance, at *Berufsfachschulen* and *Fachschulen*, and which lead primarily to vocational qualifications.

In principle, access to universities and *Fachhochschulen* is open to everyone who has passed the required exams (see above). Prospective students at colleges of

arts and music also have to demonstrate their artistic aptitude. The practical entrance tests for sport study programmes are another exception. Applicants for some programmes, in particular technical studies, have to meet additional requirements (e.g. subject-related practicals).

In addition to the content-related requirements, the number of places in certain fields of study is restricted. In some courses (e.g. medicine, veterinary medicine, dentistry, architecture, business management) there are nationwide quotas. This means that institutions of higher education have to accept students based on the number of student places available in the respective fields of study at the respective institutions. The number of student places is calculated on the base of national norms (student-staff ratios) according to the *Kapazitätsverordnung*. In those fields of study in which student demand exceeds regionally or nationally the number of student places available, access is regulated by a national admission office (*Zentralstelle für die Vergabe von Studienplätzen, ZVS*). The fields of studies for which access is administered by the ZVS are either declared to fall under limited admission (*numerus clausus*) or under an 'allocation system' (*Ortsverteilungsverfahren*), in which students are not sure of being placed at the institution of their first choice. In case of *numerus clausus*, *Abitur*-scores and social factors (e.g. queuing time) are taken into account.

## Structural characteristics

### *Professional versus academic programmes*

In Germany the differences between courses offered by universities on the one hand, and *Fachhochschulen* on the other hand, are quite similar to the differences between *hogescholen* and universities in the Netherlands. Compared to the universities, the courses of study and the teaching process at the *Fachhochschulen* are much more application-oriented and are geared to the demands of practical practice. The same applies to the (limited) research activities of the *Fachhochschulen*. Only universities have the traditional right to award the doctorate (*Doktorgrad*) and the post-doctoral lecturing qualification (*Habilitation*). These rights are termed *Promotionsrecht* and *Habilitationsrecht*, respectively. Graduates of *Fachhochschulen* are allowed to enter the university to apply for the *Doktorgrad* if they can find a university professor who is willing to act as a dissertation supervisor.

Higher education degrees in Germany are divided into two types (academic and professional degrees) and two levels (initial and post-initial). With regard to the initial level, courses at both universities and *Fachhochschulen* lead to the *Diplomgrad*, e.g. *Diplom-Ingenieur* (university) or *Diplom-Ingenieur FH* (*Fachhochschule*). Degrees granted by *Fachhochschulen* include the abbreviation FH. Universities, however, do not only award the *Diplom*-degree. In addition to giving the *Diplomprüfung*, they also give the *Magisterprüfung*, which leads to the *Magistergrad*. Whereas study programmes that culminate in a *Diplom* are confined to a single subject, those that lead to a *Magister* degree (e.g. *Magister Artium, M.A.*) consist of a combination of subjects (usually one major subject and two minor subjects, or two equally weighted major subjects).

Some university courses end with a state examination (*Staatsprüfung*) instead of an academic examination (*Hochschulprüfung*). This is the case for study programmes that are being considered of particular importance to the public interest (medicine, dentistry, veterinary medicine, pharmaceuticals, law, food chemistry and teacher training courses). Law students and future teachers who have past the (first) state examination (*Erste Staatsprüfung*) move on to a preparatory service (*Vorbereitungsdienst*), leading to a second state examination (*Zweite Staatsprüfung*). They must pass this second examination to qualify as a lawyer or teacher. The standards of performance on state examinations correspond to those of academic examinations. Hence, the difference between state and academic examinations is essentially of a formal nature. During state examinations, representatives of the state examination bodies act as examiners along with university professors.

At the post-initial level universities offer the *Doktorgrad* and the *Habilitation*. In addition, almost all *Fachhochschulen* and universities offer all kinds of post-graduate courses supplementary to the first degree (initial degree).

For every study programme, the examination regulations establish guidelines for the time in which the course and the corresponding examination should be completed. For most university courses this guideline period (*Regelstudienzeit*) is between four and five years (including a practical training, its length varying by discipline and institution) and for medicine six years and three months. On average, however, most students need much more time to finish their study. At the end of the eighties and the beginning of the nineties the average duration of study was about 7 years. The average duration of studies at the universities declined to 6.4 years in 1996 (see table 7.3). The actual study time by discipline at the universities is highest for the Law (11 years in 1996), followed by the Arts (7.5 years) and Psychology (7.6 years). The *Regelstudienzeit* for courses at *Fachhochschulen* is usually four years, including one or two practical semesters (*Praxissemester*) to gain practical experience. The average actual duration of studies at the *Fachhochschulen*, however, was 4.9 years in 1996 (see table 7.3). The average duration of studies by discipline varies from 3.9 years for the Social Sciences to 5.6 years for the Arts.

**Table 7.3:** Average duration of study (in years) by type of institution 1980-1996

	1980	1985	1990	1992	1993	1994	1995	1996
Universities	6.4	6.9	7.2	7.1	6.4	6.6	6.5	6.4
<i>Kunsthochschulen</i>	5.7	6.2	6.3	6.5	5.5	5.6	5.8	6.2
<i>Fachhochschulen</i>	4.1	4.5	5.0	5.0	4.8	4.7	4.8	4.9

Source: Bundesministerium für Bildung und Forschung

Initial studies at institutions of higher education are generally divided into a first and a second stage. The first stage (*Grundstudium*) usually takes two years (universities) or three to four semester (*Fachhochschulen*) and ends with an intermediate examination (*Diplomvorprüfung*). This *Grundstudium* should,

however, not be considered an intermediate qualification. The second stage (*Hauptstudium*) ends with a final examination leading to the initial (first) degree.

#### *Co-operation between sectors*

In Germany the clear division of higher education into university and non-university sectors is reflected in the organisational separation into an academic (universities) versus professional (*Fachhochschulen*) orientation of institutions of higher education. Universities offer academically-oriented degrees whereas *Fachhochschulen* offer courses leading to professionally-oriented degrees. One exception, however, exists: the comprehensive universities (*Gesamthochschulen*). Created in the 1970s, the *Gesamthochschulen* may be considered a special type of university, which were only ever found in two Länder (Hessen and Nordrhein-Westfalen). They provide academic programmes of study, but also programmes provided by *Fachhochschulen* and so-called integrated courses which provide qualifications after three or four years. The 'experiment' with (the very few) *Gesamthochschulen* has not been very successful. Only one of them still exists (see table 7.1).

There is no structural co-operation between the two sectors. Co-operation is encouraged, but is not regulated by the state. Incidental co-operation between *Fachhochschulen* and universities, resulting from initiatives of individual professors or managers, does take place, especially in the field of teaching.

#### Other system characteristics

##### *Finance*

With regard to the core funding (*Grundmittel*), *Fachhochschulen* and universities are funded in the same way (see also Vossensteyn et al., 1998). German higher education is publicly funded, and institutions have to follow the budgeting and accounting laws of German public administration. These laws, although set by the individual states, are more or less similar across the country. The main restrictions derive from rules such as:

- the line item budgets (representing expenditure categories) are fixed prior to the fiscal year;
- the budget may not be spent "across" line items;
- this spending rule also applies to funding for staff. According to the *Stellenplan* funds are allocated on a position by position basis; thus, institutions cannot spend personnel funds for other purposes, even if this is deemed to be necessary and appropriate;
- funds (unspent balances) may not be transferred to the following fiscal year.

The public (basic) funding of institutions of higher education is – apart from some exceptions – not the result of using a formula for calculating budget components. The funding is based on institutional budget requests, each approved – in a process of budget negotiations – by the authorities on the basis of institutional assessments (allowances by reimbursement). The starting point is the *Stellenplan* of the last year. Therefore, the budgeting process can be

characterized as incremental and input-oriented. The amount of *Grundmittel* a university or *Fachhochschule* receives in terms of allocations is not influenced by its actual number of students.

*Personnel*

Teaching staff at higher education institutions can be divided up into the following groups:

- professors;
- scientific and creative arts assistants (*wissenschaftliche/künstlerische Assistenten*);
- senior assistants and senior engineers (*Oberassistenten/Oberingenieure*);
- lecturers (*Hochschuldozenten*);
- scientific and creative arts staff (*wissenschaftliche/künstlerische Mitarbeiter*);
- teaching staff for special tasks (*Lehrkräfte für besondere Aufgaben*).

Professors at *Fachhochschulen* must, as a rule, fulfil the requirement of professional experience, i.e., they must show particular achievements in the application or development of academic or scientific knowledge and methods from professional experience of at least five years, of which at least three years must have been spent outside the higher education sector. Professors at *universities* must hold an additional academic qualification, known as *Habilitation*.

Professors at *Fachhochschulen* are generally expected to teach eighteen units (45 minutes) a week, whereas university professors teach eight units a week. Professors are usually appointed by the ministry responsible for science in the particular Land as civil servants with limited or unlimited tenure. The recruitment requirements for professors also apply to lecturers (*Hochschuldozenten*). Lecturers perform their tasks according to their specific terms of employment.

Scientific assistants (*wissenschaftliche Assistenten*) have to perform (some) teaching and research. The research is done in order to obtain a further academic qualification (doctorate or *Habilitation*). They are assigned to professors, under whose professional responsibility and supervision, they carry out their academic work. Assistants are appointed as civil servants or are taken on as salaried employees for a limited period (normally three years with the possibility of a three years extension). Senior assistants (*Oberassistenten*) must teach courses independently and conduct research. They are appointed for a four-year period. Scientific staff (*wissenschaftliche Mitarbeiter*) are civil servants or salaried employees who are responsible for teaching and research. Usually they have an unlimited tenure. In cases where it is necessary to impart mainly practical skills and knowledge, such duties can be delegated to so-called teaching staff for special tasks (*Lehrkräfte für besondere Aufgaben*).

**Table 7.4:** Staff (x 1000) at higher education institutions in Germany 1990-1996

	1990	1991	1992	1993	1994	1995	1996	% change 1990-1996
Academic	118	120	112	111	111	111	112	-5
Non-academic	211	221	209	207	206	208	208	-2
<b>Total</b>	<b>329</b>	<b>341</b>	<b>321</b>	<b>318</b>	<b>317</b>	<b>319</b>	<b>320</b>	<b>-3</b>

Source: Bundesministerium für Bildung und Forschung; Wissenschaftsrat

**Table 7.5:** Percentage female staff (absolute) 1992-1996

	1992	1993	1994	1995	1996	% change 1992-1996
Academics	22	22	22	23	23	+5
Professors	7	7	8	8	9	+29
Total staff	49	49	49	49	49	-

Source: Bundesministerium für Bildung und Forschung

#### Research

Universities perform nearly all of the research carried out by institutions of higher education. *Fachhochschulen*, however, do receive permanent governmental funding (*Grundmittel*) which partly may be used to conduct fundamental research. In practice, however, they only carry out some (applied) research, which is mostly supported by external sources of funding (both public and private sources). *Fachhochschulen* do not have the right to grant postgraduate degrees, but are – in contrast to The Netherlands – eligible for research funding from research societies (e.g. *Deutsche Forschungsgemeinschaft*).

The vast majority of the research undertaken in universities is financed through public sources. The main sources of support are the general university funds (mostly from the relevant *Land*), and highly selective funding (*Drittmittel*), based on excellence and competition, from the German research society (*Deutsche Forschungsgemeinschaft*, DFG).

#### Quality assurance

Germany does not have a national quality assessment system. Nevertheless, during the last years the idea of developing quality assessment systems has been discussed several times. In 1997 consultations on assessment systems took place in all *Länder*, as well at the interregional level. In 1995 the Conference of Rectors and Presidents of Universities and *Fachhochschulen* (*Hochschulrektorenkonferenz*, HRK) adopted a resolution “on the evaluation in the field of higher education, with particular reference to the assessment of teaching”. One of the proposals in this resolution was the establishment of a national consulting and assessment agency, independent from state intervention. This agency should, amongst other things, support institutions of higher education (at their request) with setting up internal and external assessments and act as an umbrella organisation for regional associations in the field of quality assessment.

In December 1998 the *Kultusministerkonferenz* (KMK) installed an *Akkreditierungsrat* for a three-year period. The *Akkreditierungsrat* is an independent institution that accredits agencies who in turn accredit *Fachhochschule* and university programmes at the request of a *Land*. The final decision concerning the accreditation of study courses is made by the *Land*. This implies that each *Land* can determine its own evaluation procedure for the higher education study programmes offered by its institutions. At the moment, the regional agencies in the field of quality assessment (*Akkreditierungsagenturen*) (only) have the task

to advise about and to evaluate the introduction of Bachelor's and Master's programmes (see below).

## Output

The purpose of *Fachhochschulen* is to offer study programmes that are closely related to professional practice. This aim is particularly served by incorporating one or two semesters of work experience (*Praxissemester*) into the courses of study. In many cases the topics of the theses (*Diplomarbeiten*) derive from problems that have arisen in practice, e.g. during the *Praxissemester*. Sometimes subject and problem definition are prepared in collaboration with industry and trade.

At universities student counseling offices help their graduates to find a job. Moreover, work placements offer an opportunity to establish contact with potential employers. In a number of study fields (especially in natural and engineering sciences) work experience during the study (four to six months, in some cases up to a year) is actually demanded. To improve the employment prospects of arts and social science graduates, some institutions have set up programmes in collaboration with employment offices to place them in industry and equip them with key skills. To improve the prospects of graduates of *colleges of art and music* some colleges have broadened the curricula in such a way that their graduates also can qualify for practical work (e.g. teaching, management in the cultural sector). Many institutions of higher education stimulate students to create their own job and to set up their own business.

Table 7.6 makes clear that the unemployment quota for persons with a higher education degree is significantly lower than for most other categories on the labour market and is much lower than the general unemployment quota for the whole labour market.

**Table 7.6:** Unemployment quota (in %) and level of education ('old' Länder)

	University degree	Fachhochschule degree	Fachschule	Lehre/ Berufsschule	No diploma	Total
1975	1.2	2.8	1.5	2.8	6.1	3.9
1980	1.9	1.8	1.3	2.2	5.9	3.2
1985	4.6	4.0	2.7	6.1	14.9	8.1
1990	3.9	2.8	2.1	4.3	13.3	5.9
1991	3.5	2.5	1.9	3.9	12.8	5.4
1992	3.4	2.6	2.0	4.3	14.1	5.9
1993	4.0	3.3	2.6	5.6	17.6	7.5
1994	4.1	3.5	2.8	6.1	19.1	8.0
1995	4.0	3.4	2.9	6.2	20.0	8.2

Source: Bundesanstalt für Arbeit



## Developments

### *Historical background*

The restructuring of the higher education system in West Germany in many respects followed on from the situation existing prior to 1933. In accordance with the principle of cultural federalism, the *Länder* were initially solely responsible for higher education matters. Inter-*Länder* co-ordination then ensued in 1948 through the setting up of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* of the Federal Republic of Germany (*Ständige Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland*, KMK) as well as the West German Rectors' Conference (*Westdeutsche Rektorenkonferenz*, WRK) for higher education institutions. An important role relating to advisory matters was adopted by the Science Council (*Wissenschaftsrat*) formed in 1957.

Between 1965 and 1980 the structure of the higher education system changed considerably, partly through the introduction of new types of higher education institutions and partly through the merging of existing ones. With the introduction of a second type of higher education institution—the *Fachhochschulen*—the higher education sector moved towards a binary structure. In the same period, most of the technical colleges increased their range of courses to such an extent that they were transformed into technical universities.

Moreover, the strong growth in the numbers of students led to an enormous expansion of the system. Around 30 new universities were established between 1960 and 1980, plus 95 *Fachhochschulen* (not including the *Verwaltungsfachhochschulen*). The introduction and extension of the *Fachhochschulen* have contributed considerably towards the regional expansion of the higher education network in Germany.

As a result of the unification of the two German states, higher education policy in the 1990s had the central task of shaping a common higher education landscape from two systems that had developed in different directions after 1945. This was essentially carried out by means of changing the GDR system in such a way that it fits within the higher education structures that had grown in the 'old' Federal Republic of Germany.

## Recent developments

At the end of the 1980s, there was a widespread belief in Germany that the higher education system was in a crisis and that there was a growing need for reform. Within the framework of the debate on higher education reform, the Ministry published a reform paper in 1997, *Hochschulen für das 21. Jahrhundert* (Higher Education Institutions for the 21st Century), in which the most important objectives of a reform policy were formulated. According to this policy paper, the German higher education system suffers under structural deficiencies which threaten its effectiveness and competitiveness. One of the goals in the paper regards the improvement of the attractiveness of German higher education at an international level (*Studienstandort Deutschland*). In this context, the possibility of introducing Bachelor's and Master's degrees should also be considered seriously. As a follow up, since a recent change (in August 1998) in the federal law on higher education (*Hochschulrahmengesetzes*, HRG),

institutions of higher education are permitted to award Bachelor's and Master's degrees (article 19, HRG).

#### *Bologna declaration*

As a result of the above-mentioned amendment to the federal law on higher education, universities and *Fachhochschulen* have started to set up new Bachelor's and Master's degrees. This experimental phase has led to discussions about whether the Bachelor's and Master's degrees should exist in addition to the old structure or whether they should replace the old degrees. For the moment, the new degrees exist in addition to the old degrees. The university of Bochum, however, is the first and only institution in Germany to abolish the *Diplom* and will be offering only BSc and MSc degree programmes starting in the academic year 2000-2001.

A Bachelor's degree offers students a professional qualification for the labour market. A Master's programme is open to graduates of different Bachelor's programmes. In contrast to *Diplom* degrees (FH is added to the *Diplom* of *Fachhochschule* graduates), there is no formal distinction in titles granted by a university or *Fachhochschule*. Two kinds of degrees are awarded: Bachelor/Master of Arts/Science degrees for academically oriented programmes, and Bachelor/Master of Engineering degrees for vocational oriented study programmes. All of the courses which are funded by the German government must be accredited. In February 2000 the Association of Universities and Other Higher Education in Germany (the *Hochschulrektorenkonferenz*, HRK) made proposals to implement the assessment procedures.

Numerous German institutions of higher education offer international degree courses (see e.g. DAAD, 2000). The range of study opportunities covers undergraduate, graduate and postgraduate courses. The predominant or exclusive language of instruction, at least in the first semesters, is English.

#### Conclusion

One of the major distinguishing features of German higher education in the last three decades has been the establishment of two separate sectors, a more research-oriented university sector and a more vocationally-oriented non-university sector. Consequently, between 1965 and 1980 the German higher education system clearly moved towards a *binary structure*. Despite the introduction of Bachelor's and Master's degrees, there are no relevant signals that the differences between these two sectors will become smaller in the near future. There is no process going on in which the upgrading and lengthening of courses in the vocational higher education sector will lead to degrees similar to those in the university sector. Nor, in general, is there a tendency to create one unitary higher education sector, as e.g. was the case in the United Kingdom.

The German binary higher education system, like the binary system in the Netherlands, can be regarded as a 'pure' one. In both higher education systems only universities have the right to award doctoral degrees, and in both systems nearly all of the research in the higher education sector is carried out

by the university sector. A difference between the two countries regards the proportions of the two subsystems. In the Netherlands the non-university sector, measured in student numbers, is significant larger than the university sector, whereas in Germany only one fourth of the total student population studies at *Fachhochschulen*.