

04 Schools and colleges for engineering, arts and crafts

Education and training programmes

Schools and colleges for engineering, arts and crafts primarily provide educational programmes for **initial vocational education and training (IVET)**. These include the following:

- the **5-year colleges for engineering**, which cover years 9-13, introduce both the theory and practice of the respective subject from the beginning, and provide post-secondary forms of teaching and learning in the final year: colleges for engineering are completed with a matriculation exam;
- the **4-year schools for intermediate vocational education** (years 9-12), which are completed with a final examination and are linked to the post-secondary sector via add-on courses, the *Studienberechtigungsprüfung* or *Berufsreifeprüfung*;
- the **2-year add-on courses**, leading graduates of subject-specific schools for intermediate vocational education to the educational objective of the related 5-year colleges for higher vocational education; in the case of 3-year schools for intermediate vocational education, a so-called **preparatory course** must be completed before entry to the add-on course;
- the (4-semester) **post-secondary VET courses** (years 13-14), which require university/higher education entrance qualifications and are completed with a diploma exam.

As well as IVET programmes there are also differentiated **continuing VET programmes for people in employment**. These include:

- the **8-semester colleges for higher vocational education for people in employment**, which lead to the same educational objective as the respective 5-year colleges for higher vocational education and are designed in modular form. Apprenticeship diploma holders start in the first semester, graduates of schools for intermediate vocational education or industrial master colleges enter in the third semester;
- the **6-semester post-secondary VET courses for people in employment** (night school), which correspond to the related semesters of the colleges for higher vocational education for people in employment in the last four semesters, require university/higher education entrance qualifications and are completed with a diploma exam; it is the same with 4-semester post-secondary VET courses;
- the **7-semester schools for intermediate vocational education for people in employment**, which are completed with a final examination and are linked to the post-secondary sector via add-on courses, the *Studienberechtigungsprüfung* or the *Berufsreifeprüfung* examination;
- the **industrial master colleges, building craftsperson schools and master craftsperson schools** which are all completed with a final exam and serve to provide higher vocational qualifications.

Autonomous structural leeway

Decentralisation and thus **school autonomy** creates structural leeway – at school level mainly as regards teaching, at provincial level mainly relating to resource management. School autonomy in teaching means that regional needs can be met and the school profile enhanced (curricular autonomy).

Curricular autonomy facilitates both the selection of special focuses as foreseen by the curriculum and the development of training focuses which are chosen autonomously by the school. In addition, schools can develop alternative compulsory subject areas which enable the students to design their school career in line with individual talents and interests. Furthermore, optional educational programmes, such as optional subjects, may be specified within the scope of the school's autonomy to provide important additional qualifications for practice.

Area specialisations

Schools and colleges for engineering, arts and crafts offer more than **20 area specialisations**, which enable focuses on the various fields of technology.

These institutions cover all the major disciplines within industry, crafts and trade by offering related modern educational programmes. These include the following areas, for example:

Construction Engineering, Interior Architecture and Timber Technologies, Electrical Engineering, Electronics and Technical Computer Science, Biomedical and Health Engineering, Informatics, Information Technology, Building Technology, Mechanical Engineering, Aircraft Engineering, Mechatronics, Plastics Technology, Materials Engineering, Raw Materials Engineering, Media, Media Engineering and Printing Technology, Chemical Engineering, Food Technology, Industrial Engineering, Art and Design, Graphic and Communications Design.

Specialisations within an area are possible due to **training focuses** or the **schools' autonomous focuses**.

Educational objectives

Schools and colleges for engineering, arts and crafts teach **top-quality subject-specific and methodical competence** for advanced studies, the in-depth general and conceptual knowledge required for independent participation in continuing education and training, as well as **specialist knowledge and skills required for exercising a profession**.

As well as subject-specific education, particular attention is also paid to the further development of those **general qualifications and personal and social skills** to safeguard the graduates' employability and enable them to participate successfully in lifelong learning through self-study or study programmes at establishments of higher learning.

Schools and colleges for engineering, arts and crafts believe a key objective is the students' acquisition of **entrepreneurial, innovative thinking and acting** based on well-founded business and legal competences.

The specific objectives and purpose of these schools and colleges are the following:

- **Schools for engineering, arts and crafts** aim at the acquisition of subject-specific basic knowledge and skills that enable their graduates to exercise an occupation in the engineering, arts or crafts sector immediately upon completion and they also aim at extending and deepening the acquired general education.
- **Colleges for engineering, arts and crafts** aim at the acquisition of higher-level general and subject-specific education that enables graduates to exercise a senior occupation in the engineering, arts or crafts sector in industry and trade and leads to university/higher education entrance qualifications.

Educational content

In order to meet general educational objectives, all curricula include a **common curriculum architecture**, which is adjusted to the individual educational programme and area specialisation. This curriculum architecture comprises the areas of **general education, occupation-related theory and occupation-related practice. Scientific knowledge and IT skills** are taught as a foundation and also for specific occupations in accordance with the requirements of the respective subject area. Taking into account the qualifications and licenses which entitle their graduates to exercise specific occupations as entrepreneurs according to the curricula, the schools and colleges for engineering, arts and crafts teach **legal, business-related and entrepreneurial competences** to the appropriate extent.

The underlying principles of all subjects are **practice orientation** and **topicality of content**. Apart from the workshops, construction exercises and exercises in different laboratories, mandatory work placements as well as projects including diploma projects conducted in collaboration with businesses constitute additional elements of specialist training.

Mandatory work placements are of differing length: in the 5-year colleges for higher vocational education they last for 8 weeks; in schools for intermediate vocational education they last for 4 weeks in general; in the so-called "schools for intermediate vocational education with work placement" an additional work placement of 12 weeks is compulsory in the final school year.

Qualifications

Final examination

Upon passing the final examination at **schools for intermediate vocational education** in engineering, arts and crafts and **schools for intermediate vocational education for people in employment**, graduates boast professional qualifications entitling them to immediately exercise the respective occupations and giving them access to regulated professional activities. The final certificate additionally entitles them – in the case of 3-

year schools for intermediate vocational education, following completion of a preparatory course – to entry to a subject-related add-on course or the 3rd semester of the college for higher vocational education for people in employment.

Final examinations are also foreseen for **master craftsperson schools, foreperson courses and building craftsperson schools**.

Matriculation and diploma exam

Graduates of **colleges for higher vocational education and colleges for higher vocational education for people in employment** acquire a **double qualification**: The matriculation and diploma certificate opens up access to the university/higher learning sector and enables holders to immediately exercise professions at executive level in the engineering, arts or crafts sector in industry and trade. A central component of the matriculation and diploma examination is the **diploma project**, where the students must comprehensively and independently examine a topic from the specialist area. These diploma projects are conducted in the final year under the supervision of experienced teaching staff, in many cases in **cooperation with the business sphere**. This not only enables the students to gain major subject-related experience in real projects but also often make the first contacts for subsequent employment.

Diploma examination

The **post-secondary VET courses** are completed with a **diploma examination**. As the students at the post-secondary VET courses have already acquired university/higher education entrance qualifications, the diploma examination comprises the subject-specific modular exams of the matriculation and diploma exam, in particular the **diploma project**.

Other certificates

Due to the acquisition of **certificates of relevance for various occupations**, practice-oriented, competence-based teaching also leads to **additional qualifications for students**. Certificate courses are offered in **foreign languages** (e.g. the First Certificate of English or the Business English Certificate), **informatics** (e.g. the ECDL; CISCO or Microsoft network technology), **business** (e.g. SAP, EBCL) and **quality assurance**.

Credit transfer of subject-specific knowledge

For studying at **Fachhochschulen and universities**, graduates of colleges for engineering, arts and crafts can be awarded credits individually for subject-specific competences. This can lead to a reduction of the time they need to study.

As already in the previous mutual recognition directives, at the EU level the high educational level of colleges for engineering is taken into account in **Directive 2005/36/EC on the recognition of professional qualifications**, which entered into force on 20 October 2005.

Professional title *Ingenieur/Ingenieurin*

Graduates of colleges for engineering can submit an application to the Federal Ministry of Science, Research and Economy to be awarded the **professional title *Ingenieur/Ingenieurin*** following at least three years of relevant professional practice.

A prerequisite for being awarded the professional title *Ingenieur/Ingenieurin* is that the respective college for engineering or area specialisation is listed in the ***Ingenieur Ordinance*** (pursuant to §3 of the 2006 *Ingenieur Act*) and that the **practical training has been subject-oriented**.

Quality

In line with their responsibility towards stakeholders, schools and colleges for engineering, arts and crafts have **implemented the quality management system QIBB**, which builds on state-of-the-art and recognised principles of quality management and is oriented towards the **European quality framework CQAF** (Common Quality Assurance Framework) (see QIBB, www.qibb.at).

The cornerstones of QIBB are medium- and short-term plans on the basis of **school and work programmes, evaluations, quality reports** and the agreement on **development and implementation objectives** within the framework of **management and performance reviews**. QIBB is not only limited to the **school level** but also covers the **provincial level** (school supervision) and the **federal level** (GD VET at BMBF). This ensures that processes affecting several organisational levels are also covered by quality management.

Mission statement

QIBB of the engineering, arts and crafts school sector builds on the joint, nationwide valid **mission statement of colleges for engineering**, which can be supplemented to include statements specific to the school location. The mission statement includes the core messages on ongoing educational processes, which are presented in the following seven quality areas: “educational mission”, “innovative programmes”, “practice orientation”, “quality”, “environment for learning and working”, “personnel” and “internationalism”. The core messages in brief:

The Austrian schools and colleges for engineering, arts and crafts ...

- offer their students **well-founded technical or industry-specific education and training** as well as **comprehensive general education** geared towards **personal growth**;
- view their core competence in the development of **innovative programmes** in all areas of technology;
- secure their special trademark “**practice orientation of VET programmes**” through the combination of theoretical education and occupation-related practice, through the practical experience of the teaching staff and intensive cooperation with business and industry;
- consider themselves committed to the highest standards in terms of **quality** and their continuous further development in their work;
- offer their students **support and encouragement** in a motivating environment for learning and working;
- consider the skills, **experience and commitment** of staff as key essentials for successfully implementing their educational functions;
- deliver their education and training work with a strong **focus on international aspects** and create mobility, cosmopolitanism and intercultural understanding.

	Locations	Pupils
Colleges for engineering, arts and crafts, including industrial master colleges	144	63,865

Source: *BMBF Zahlenspiegel 2013, school year 2012/2013*