In this study programme, students deal with the questions of why and how atoms combine to form molecules; they gain basic knowledge of the nature and diversity of chemical bonds and elements and how these are related to the external properties of the materials. But chemistry is not only knowledge; it is also a craft: the future chemists therefore spend much time in laboratories and learn to determine the structure of a material (analysis), synthesise a new material (preparative chemistry), measure the properties of materials with the help of instruments (physical chemistry) or even understand and predict properties with the help of theoretical methods (computational chemistry). Chemistry does not stand alone, it uses mathematical tools and has synergies with biology and physics that are becoming increasingly close. For this reason, during the first academic year, courses are also held in these subjects.

Profile of the study programme

Motivation
Life consists of the transformation of substances; with the help of sunshine as a source of energy a plant transforms carbon dioxide into an almost unbelievable number of refined materials and assembles them into a beautiful flower or a practical grain of wheat. Chemistry is the science of the transformation of substances. The contributions by this science to the well-being of our society are immense – be it drugs, plastics or new materials. But the greatest challenges are still waiting for future generations, for you! We are looking for molecules that heal illnesses that were incurable up to now, molecules (or nano particles) that are able to transform sunlight into electricity or hydrogen in a way that is ecologically and economically acceptable, substances that light up our rooms with little energy and no mercury, or that allow us to have even more beautiful smartphone displays, and much more. Chemists are the magicians who have the knowledge and possess the skills to understand the structure and properties of materials and to connect atoms to form new materials.

Learning outcomes
In the bachelor’s course you gain a decisive introduction to the knowledge and, more importantly, the skills mentioned above. You will learn why atoms join together to form molecules – about the nature and diversity of chemical bonds and the chemical elements, and how they are related to the properties of substances. In the laboratory you will learn to plan and realise chemical experiments, synthesise new materials and determine their structure. You will also learn to handle chemical substances practically, without danger.

Chemistry is not only knowledge; it is also a craft. You will therefore spend an important part of your time in laboratories learning to determine the structure of a material concretely (analysis), synthesise new substances (preparative chemistry), measure the properties of substances with the help of instruments that are more and more efficient (physical chemistry) or even understand and predict properties with the help of theoretical methods (computational chemistry).
A complete list of all further recognised Swiss school-leaving certificates is to be found on the webpages of swissuniversities (in French and German only): http://studies.unifr.ch/go/en-admission-swiss-certificates

Foreign upper secondary school-leaving certificates are recognised only if they correspond substantially to the Swiss Maturity Certificate. They must qualify as general education. Foreign school-leaving certificates are considered to be general education if the last three years of schooling include at least six general education subjects, independent from each other, in accordance with the following list:

1. First language (native language)
2. Second language
3. Mathematics
4. Natural sciences (biology or chemistry or physics)
5. Humanities and social sciences (geography or history or economics/law)
6. Elective (computer sciences or philosophy or an additional language or an additional subject from category 4 or 5)

The general admission requirements to the bachelor programmes at the University of Fribourg for holders of foreign school-leaving certificates as well as the admission requirements for individual countries are to be found on the webpages of swissuniversities: http://studies.unifr.ch/go/en-admission-countrylist

In addition, foreign candidates must present proof of sufficient language skills in French or German.

The assessment of foreign school-leaving certificates is based on the «CRUS Recommendations for the Assessment of Foreign Upper Secondary School-Leaving Certificates, 7 September 2007» (http://studies.unifr.ch/go/crus07en). The admission requirements are valid for the respective academic year. The Rectorat of the University of Fribourg reserves the right to change these requirements at any time.

Alternatives

Also offered as a minor study programme (60/30 ECTS credits).

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