Chemistry

Degree conferred
Bachelor of Science in Chemistry

Options
Two options available:

- Chemistry (150 ECTS credits)
- Teaching (120 ECTS credits)

Languages of study
Study in French and German

Commencement of studies
Commencement of studies only in the Autumn Semester (September)

Access to further studies
Master

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 understand and predict these properties with the help of theoretical methods (computational chemistry).
Chemistry is not an isolated science: 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).
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, you will learn these subjects too, both theoretically and practically.

Academic and professional openings
The bachelor programme qualifies you for a number of professions. The majority of students, however, decide to pursue a master programme. In either case the most important employers are the pharmaceutical, chemical or food industries, companies that build, sell and maintain chemical, analytical or scientific instruments, and regulatory and administrative authorities. Some graduates pursue «non-classical» careers, for example, for an IT company. One highly competitive and interesting possibility would be to gain a master's degree and a doctorate and aspire to an academic career in research and education.

Studies organisation

Structure of studies

150 ECTS credits + 30 ECTS credits in a minor study programme freely chosen, 6 semesters
or
120 ECTS credits + 60 ECTS credits in a minor study programme freely chosen that corresponds to a teaching subject for baccalaureate schools (DEEM/LDM), 6 semesters

Curriculum

http://studies.unifr.ch/go/mjkY5 *(French)*
http://studies.unifr.ch/go/0fTFn *(German)*

Admission

The following **Swiss school-leaving certificates** grant **admission to bachelor programmes** at the University of Fribourg:

- Swiss academic Maturity Certificate
- Federal vocational or specialised Baccalaureate + supplementary examination of the Swiss Maturity Commission (passerelle)
- Bachelor Degree from a Swiss university, from an accredited Swiss university of applied sciences (HES/FH) or from a Swiss university of teacher education (HEP/PH)

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*): https://studies.unifr.ch/go/fr-admission-swisscertificates; https://studies.unifr.ch/go/de-admission-swisscertificates
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, among other things, the last three years of schooling include at least six general education subjects, independent from each other, in accordance with the following list:

1. Language of instruction (at the school)
2. Second language (a foreign 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: https://studies.unifr.ch/go/en-admission-countries
In addition, applicants with foreign school-leaving certificates must present **proof of sufficient language skills in French or German**.
All guidelines are available at *(only in French and German)*: https://studies.unifr.ch/go/adm-guidelines

The assessment of foreign school-leaving certificates is based on the «Recommendations for the Assessment of Foreign Upper Secondary School-Leaving Certificates» adopted by the Chamber of universities of swissuniversities on 21.11.2024 (https://studies.unifr.ch/go/swissuniversities24fr; https://studies.unifr.ch/go/swissuniversities24de). 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).

Contact

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