**Biochemistry**

The Bachelor's programme in biochemistry is devoted to the study of fundamental chemical and physical processes in living organisms. It comprises molecular studies with a specific focus on enzymes and their role as catalysts in chemical reactions. A main interest is the study of cellular functions including the mechanisms involved in cell proliferation and development. Students also learn techniques for analyzing DNA and genetic information as an integral part of the study program. The biochemistry course thus gives students an opportunity to familiarize themselves with practical laboratory methods that are applied in several disciplines. It requires knowledge of the research tools used in chemistry and biology (microscopy, spectrometry, DNA sequencing, etc.). A command of bioinformatics tools is also essential to be able to store, manage and interpret the overwhelming volume of data provided by current analytical techniques.

**Profile of the study programme**

Biochemistry involves the study of fundamental chemical and physical processes within living organisms. It focuses especially on molecules such as proteins, lipids, carbohydrates and nucleic acids. The topics studied cover fundamental functional aspects of cells and organisms in the context of human medicine, molecular biology, microbiology, environmental science, industry and biotechnology. Biochemistry encompasses first and foremost the study of enzymes, their highly specific role and their power as catalysts, biochemical methods and their functions. Students are obliged to familiarize themselves with a variety of concepts of numerous disciplines. Moreover, life sciences benefit from a flow of continuous technical innovation, which renders analytical tools increasingly sensitive and effective. The latest analytical instruments produce data at such speed and in such quantities that simply storing the information is becoming a problem. Bioinformatics tools provide a means of analyzing large data sets according to intelligent criteria. Modern biochemists have to familiarize themselves with these bioinformatics tools and learn how to put the large number of databases containing invaluable information to good use. Researchers no longer spend their time simply generating data, but also in analyzing and comparing their own data with the ones from their peers.

**Academic and professional openings**

In a century which seems set to become a «century of nano-science and bioscience», trained biochemists face a vast array of career opportunities.

Ideally followed by a Master of Science in Biology (Option: Biochemistry), this Bachelor's degree prepares the future graduates for work in the area of research and technological development focusing on biology, biochemistry or nano-technology primarily within a variety of academic or entrepreneurial, private settings (e.g., agro-chemistry, pharmacology, or biotechnology). This degree therefore opens the doors to a career in either the public or private work environment, be it in a laboratory, or in an administrative position dealing for instance with patents, environmental protection, health care, or agriculture.

Biochemists with a Master's degree can continue to obtain a science doctorate in a university or specialized research institute. The professional openings for students who have successfully obtained their doctorate are similar, but with a higher degree of responsibility. For example, a Ph.D. followed by a post-doctorate training course is the ideal career path for a post as head of a research unit or as a university professor.
Organisation des études

Structure of studies

120 ECTS credits + 60 ECTS credits in one or two minor study programmes freely chosen, 6 semesters

Curriculum

http://www.unifr.ch/science/plans/plans_e.php

Admission

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

- Swiss academic Maturity Certificate
- Swiss professional Maturity Certificate in conjunction with the supplementary exam certificate from the Swiss Maturity Commission
- 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 recognized Swiss school-leaving certificates is to be found on the webpages of swissuniversities (in French and German only):
https://www.swissuniversities.ch/en/services/admission-to-universities/schweizerische-ausweise/

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, chemistry or physics)
5. Humanities and social sciences (geography, history or economics/law)
6. Elective (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://www.swissuniversities.ch/en/services/admission-to-universities/countries/

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).

Contact

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