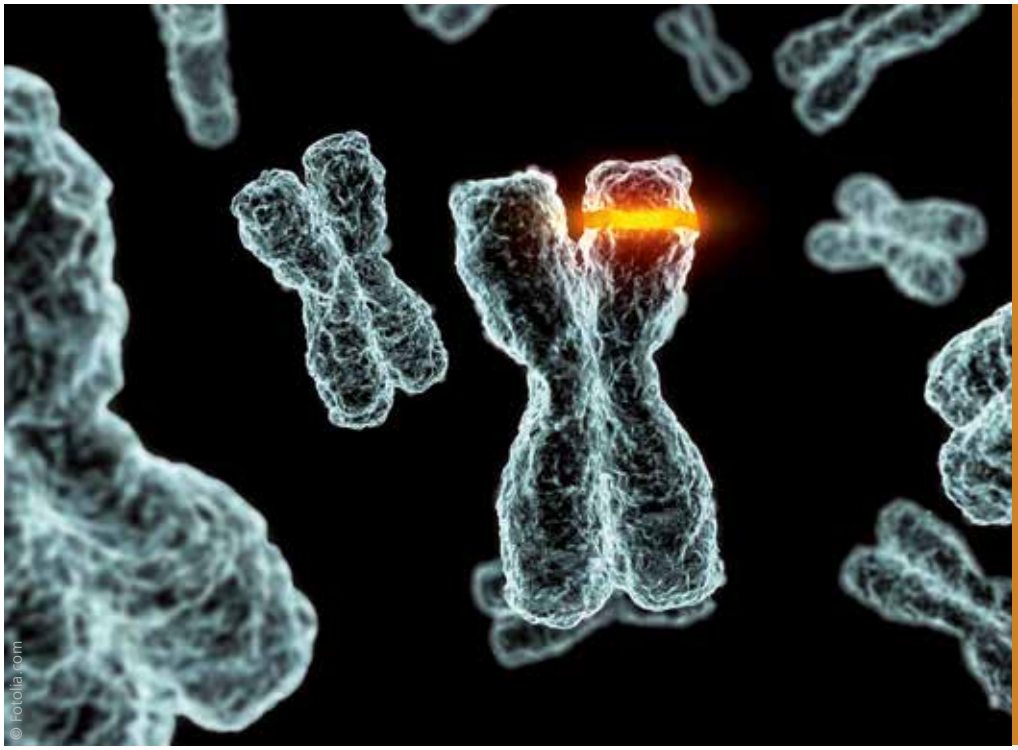

will you ever stop learning about life?

master of science (MSc) in Molecular Life Sciences

GENERAL OUTLINE

Objectives

The Master of Science (MSc) in Molecular Life Sciences is intended for students who are curious, motivated, and enthusiastic about the exploration of life through the application of methods in experimental biology.

This course provides in-depth knowledge of molecular genetics, genomics, cellular and developmental biology. It offers in particular specialist courses exploring the interactions of molecules within networks that control the life of micro-organisms, plants, animals and humans. A practical course unique in Switzerland allows students to sequence the genome of a micro-organism, giving them an opportunity to apply the most recent sequencing techniques and acquire skills in genome annotation. Scientific writing is also taught on the course.

Career prospects

The curriculum offers advanced training in cutting-edge experimental biology and in scientific communication, which is ideal for a number of career prospects including:

- Academic research
- Pharmaceutical industry
- Diagnostic and biomedical research
- Swiss Federal research stations
- Biotechnology firms
- Environmental technologies

GENERAL INFORMATION

Organiser

School of Biology,
Faculty of Biology and Medicine:
www.unil.ch/ecoledebiologie

Degree awarded

Master of Science (MSc) in Molecular Life Sciences, subject area:

- Bioinformatics
- Microbiology
- Integrative Biology

ECTS credits

90

Duration

3 semesters

Teaching language

English

Enrolment

Applications must be submitted on time to the Admissions Service:
www.unil.ch/immat

Contact

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Subject to changes
(only the official texts are authentic)
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www.unil.ch/masters

UNIL | Université de Lausanne
Faculté de biologie et de médecine

EDUCATIONAL CONTENT

Description

The first semester introduces students to multidisciplinary work, alone and in groups. All students attend classes in genome sequencing and scientific writing and presentation. Through optional courses, they acquire a solid understanding of molecular genetics, cellular and developmental biology, genomics, bioinformatics and biotechnology. An initial placement in a laboratory, participation in seminars and an introduction to bibliographical work complete the development of research work.

In the second semester students use the techniques of comparative genomics to annotate a de novo sequenced genome. They also draft an application for a research grant. The programme offers a wide range of optional modules with the possibility of choosing certain courses from the MSc in Behaviour, Evolution and Conservation as well as Bioinformatics courses offered by the University of Geneva. Depending on the subjects chosen, students can specialise in the following research fields: Genomics, Bioinformatics, Plant Biology, Microbiology, Biotechnology and Development Biology. Students begin their personal research work.

Research work continues in the third semester. It leads to the writing of a dissertation which is defended orally before a jury.

Possibilities of specialising in Bioinformatics, or Microbiology, or Integrative Biology

The Universities of Geneva and Lausanne have joined forces to offer a specialised curriculum in Bioinformatics. These students will follow the same compulsory courses as other students taking the MSc in Molecular Life Sciences while their optional courses will focus on Bioinformatics.
Students with a particular interest in Microbiology or Integrative Biology will follow optional courses focused on this subject to obtain the chosen specialisation.

Examinations

Courses in the first semester are subject either to continuous assessment or written and/or oral examinations. Questions are often broad-based and refer to the subject matter of more than one course. A practical mark is also given for introductory research work.

For the second semester, examinations are continuous, following directly after the different teaching blocks. They may be oral, written or practical.

Masters work includes a written dissertation which must be defended orally. A practical mark is also taken into account in the final calculation to determine the success of this work.

Skills development

University studies develop, in addition to specific academic skills, a great many transverse skills such as: oral and written communication, critical, analytical and summarising faculties, abilities in research, the learning and transmission of knowledge, independence and the ability to make judgments in the field of specialisation and overlapping areas.

This panoply of skills, combined with specialist knowledge acquired in the course of studies, is excellent preparation for a wide range of employment opportunities and economic sectors, such as those mentioned in the Career prospects.

SYLLABUS

1st semester

Common activities: sequencing of a genome and scientific authoring work.

Optional classes in:
- Microbiology
- Plant Biology
- Biotechnology
- Developmental Biology
- Bioinformatics and Systems Biology

Personal Research Project (introduction)

30 ECTS credits

2nd semester

Common activities: annotation of a genome and scientific writing.

Optional classes in:
- Genomics
- Plant Biology and Biochemistry
- Developmental Biology
- Signals and Gene Regulation
- Microbiology
- Bioinformatics

Start of Personal Research Project

30 ECTS credits

3rd semester

Personal Research Project
- Continuation and Conclusion of Research Project

30 ECTS credits

PRACTICAL INFORMATION

Admission requirements

Candidates must be holders of a Bachelor of Science (BSc) in Biology or in a field considered to be equivalent awarded by a Swiss university. Another degree or academic title may be judged equivalent and give access to the Master's degree course, with or without further conditions.

Regulations and additional information concerning the course

Internet site of the School of Biology:
www.unil.ch/ecoledebiologie/page80028.html

Administrative information

Ms Almudena Vazquez
biologie-etudiants@unil.ch

Head of studies

Prof. Christian Fankhauser
Christian.Fankhauser@unil.ch

Final enrolment date

30 April
Candidates requiring a visa to study in Switzerland: 28 February.

Start of courses

Mid-September

Part-time Master's degree

Subject to certain conditions, Master's studies can be followed part-time. In this case they correspond to semi-continuous studies (50%) during at least 6 semesters: All theoretical teaching in the first and second semester and then all practical work (introduction to research and Master's dissertation).
For more details concerning the requisite conditions:
www.unil.ch/immat/page87595.html
See also Directive 3.12:
www.unil.ch/interne/page44629.html#3

Academic calendar

www.unil.ch/central/page4804.html

Mobility

Students registered for a Master's degree cycle may complete a part of their studies in a partner institution recognised by the UNIL.

After approval of the mobility study programme by the School of Biology and successful completion of the relevant examinations, the credits earned are validated and incorporated in the student's degree curriculum.

General information on studies, career prospects and guidance

Guidance and Advisory Service:
www.unil.ch/soc

Accommodation and financial assistance

Office for socio-cultural affairs:
www.unil.ch/sasc

International students

www.unil.ch/international

Study abroad possibilities

www.unil.ch/echanges