



Master of science (MSc) in Actuarial science

GENERAL OUTLINE

Objectives

This Master's degree offers a complete basic education for future actuaries and risk managers. An actuary is a business professional who deals with the financial impact of risk and uncertainty, typically in insurance firms, multinationals and pension funds.

Most of the subjects taught involve applied mathematics, the actuary's most important working tool. Good knowledge of management, finance, economics, data analytics and information technology is also necessary to ensure an adequate level of professional expertise.

This program fulfills the requirements of the syllabus of the Swiss Association of Actuaries (SAA) and prepares students to some exams of the Institute and Faculty of Actuaries (UK) and of the Society of Actuaries (US).

Career prospects

University studies develop many transversal skills: oral and written communication, critical, analytical and summarising faculties, abilities in research, etc.

This panoply of skills, combined with specialist knowledge acquired in the course of studies, is an excellent preparation for a wide range of employment opportunities in financial sectors:

- Insurance companies
- Banks
- Consulting firms
- Pension funds
- Regulatory authorities
- Social security institutions
- Multinationals

what is the real value of risk?

GENERAL INFORMATION

Organizer

HEC Lausanne: www.unil.ch/hec
Department of Actuarial Science (DSA):
www.unil.ch/dsa

Degree awarded

Master of Science (MSc)
in Actuarial Science
Maîtrise universitaire ès Sciences
en sciences actuarielles

ECTS credits

120

Duration

4 semesters

Teaching language

English. Level necessary for your studies: C1

Academic advisor

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Additional information

www.unil.ch/hec/masters



Version: February 2024
Subject to changes.
Only the official texts should be considered binding.

EDUCATIONAL CONTENT

Description

From the first to the third semester, students follow compulsory and optional courses in the main areas of actuarial science.

In the first semester, all students must attend a set of six compulsory courses.

In the second semester, students gain knowledge of actuarial mathematics for life assurance, risk theory, modeling distributions of claims/losses, social security, simulation and programming.

In the third semester, students gain knowledge of actuarial mathematics for advanced life insurance concepts, advanced actuarial modeling, credibility theory, accounting, asset management and risk management, analysis of results, pension funds management and data science.

The fourth semester is dedicated to the Master's thesis. The student may opt for a research thesis or an internship thesis.

Mobility

During their third semester, students may study in a university recognised by UNIL, under a mobility exchange programme. They may get a maximum of 30 credits in another institution.

SYLLABUS*

1st semester

Compulsory courses

- Probability and Stochastic Processes
- Quantitative Methods for Actuaries
- Mathematics of Compound Interest
- Insurance Economics
- Principles of Finance
- Computational Tools for Actuaries

30 ECTS credits

2nd semester

Compulsory courses

- Risk Theory
- Loss Models
- Life Contingencies I
- Ratemaking & Claims Reserving
- Social Insurance

24 ECTS credits

3rd semester

Compulsory courses

- Asset and Liability Management for Actuaries
- Life Contingencies II
- Credibility Theory
- Insurance Analytics
- Actuarial Modelling

24 ECTS credits

Optional credits

- Simulation Methods in Finance & Insurance
- Programming
- Time Series
- Accounting
- Blockchain & Crypto Economy
- Actuarial Data Science
- Investments
- Mathématiques des caisses de pension
- Prévoyance professionnelle suisse
- Topics in Finance

6 ECTS credits per semester

4th semester

Academic or internship Master thesis

30 ECTS credits

* the official study plan prevails.

GENERAL INFORMATION

Admission requirements

A Bachelor's degree from a Swiss university in Economics, Management, Finance, Information Systems or Mathematics.

Another degree or university qualification may be judged equivalent and give access to the Master's program, with or without conditions.

Enrolment and final dates

The candidate's application must be submitted to the UNIL Admissions Department before 30th April: www.unil.ch/immat

Candidates needing a study visa: 28th February

Start of courses

Mid-September.
Academic calendar: www.unil.ch/central/calendar

Part-time Master's degree

Under certain conditions, this Master's program can be followed part-time: www.unil.ch/formations/master-temps-partiel

General information on studies

www.unil.ch/soc

Career prospects

www.unil.ch/perspectives/unil-et-apres
<https://heccareer.ch/>

Accommodation and financial assistance

www.unil.ch/sasme

International

www.unil.ch/international



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