



# Master of science (MSc) in Actuarial science

## GENERAL OUTLINE

### Objectives

This Master's degree offers a complete basic education for future actuaries. An actuary is a business professional who deals with the financial impact of risk and uncertainty.

Most of the subjects taught involve applied mathematics, the actuary's most important working tool. Good knowledge of management, finance, economics 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 and prepares students to some exams of the Society of Actuaries.

### Skills development and career prospects

University studies develop, in addition to specific academic skills, many transversal 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 take decisions.

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. The following career prospects may be cited as examples:

- Insurance companies
- Banks
- Consultants
- Pension funds
- Control authorities
- Social security systems

## what is the real value of risk?

## GENERAL INFORMATION

### Organiser

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

### Degree awarded

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

### ECTS credits

120

### Duration

4 semesters

### Teaching language

English. Recommended level: C1.

### Enrolment

The candidate's application must be submitted to the UNIL Admissions Department before the final date: [www.unil.ch/immat](http://www.unil.ch/immat)

### Contact

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HEC Lausanne  
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Subject to changes.  
Only the official texts are authentic.

## EDUCATIONAL CONTENT

### Description

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

The fourth semester is dedicated to writing a Master thesis or an internship dissertation.

### Examinations

Examinations on all taught subjects are held at the end of each semester.

### 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.

The prior authorisation of the Master's Committee is required for the recognition of credits earned abroad.

## SYLLABUS

### 1<sup>st</sup> semester

Compulsory courses

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

**24 ECTS credits**

Options program

- Computational Tools for Actuaries
- Financial Accounting

**6 ECTS credits**

### 2<sup>nd</sup> semester

Compulsory courses

- Life Contingencies I
- Risk Theory
- Loss Models
- Health and Life Insurance
- Social Insurance

**24 ECTS credits**

Options program

- Advanced Probability Theory
- Simulation Methods in Finance and Insurance
- Time Series

**9 ECTS credits**

### 3<sup>rd</sup> semester

Compulsory courses

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

**15 ECTS credits**

Options program

- Insurance Accounting
- Mathématiques des caisses de pension
- Prévoyance professionnelle suisse
- Asset Pricing
- Derivatives

**15 ECTS credits**

### 4<sup>th</sup> semester

Master thesis or internship

**30 ECTS credits**

## 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.

### Regulations and additional information

[www.hec.unil.ch/masters](http://www.hec.unil.ch/masters)

### Final enrolment date

30<sup>th</sup> April

Candidates needing a study visa:  
28<sup>th</sup> February

### Start of courses

Mid-September. Academic calendar:  
[www.unil.ch/central/calendar](http://www.unil.ch/central/calendar)

### Part-time Master's degree

Under certain conditions, this Master programme can be followed part-time:  
[www.unil.ch/enseignement/tempspartiel](http://www.unil.ch/enseignement/tempspartiel)

### General information on studies

[www.unil.ch/soc](http://www.unil.ch/soc)

### Career prospects

[www.unil.ch/perspectives](http://www.unil.ch/perspectives)

### Accommodation and financial assistance

[www.unil.ch/sasme](http://www.unil.ch/sasme)

### International students

[www.unil.ch/international](http://www.unil.ch/international)

### Study abroad opportunities

[www.unil.ch/echanges](http://www.unil.ch/echanges)



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