Master in Financial Engineering

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École
polytechnique
fédérale
de Lausanne

Roadmap

1. What is Financial Engineering?
2. Career choices
3. The MFE at EPFL
4. Admissions conditions
5. FAQ

1. What is Financial Engineering?

Financial engineering is the application of mathematical methods to the solution of problems in the field of finance such as:

- Portfolio allocation
- Risk measurement and management
- Risk hedging
- Financial decisions

- Financial engineering draws on applied mathematics, probability, statistics, and computer science and combines them with economic theory.

2. Career choices

The need for well-trained financial engineers and financial data experts has surged in all areas of finance.

- **Portfolio management :** identify management objectives and translate them into strategy, taking uncertainty into account.

(investment banks, hedge funds, pension funds, insurance companies, etc.)

- **Risk management and control** : definition and implementation of rules to measure and control risk

(all companies -not just financial- and regulatory agencies)

Career choices

- **Corporate finance** : financing a company's activities

(all companies ,including financial)

- **Asset trading** : buying and selling assets

(banking, hedge funds, insurance)

- **Development** : development and marketing of new products and/or markets

(banks, foreign exchange, consulting firms)

- **Research** : academic - SFI@EPFL doctoral program or elsewhere

(financial companies, regulatory agencies, public institutions)

Recent graduates

Cargill
Commodity Trader

Goldman Sachs
Quant

McKinsey&Company
Consultant

Deloitte.
Quantitative Analyst
Consultant

Nestlé
Investment Analyst

UBS
Quantitative Financial Analyst

pwc
Associate

COVARIO
Quant

UNIGESTION
Portfolio Analyst

TOTAL
Oil derivatives Analyst

Unit8
Data engineer

citibank
Risk Model Developer

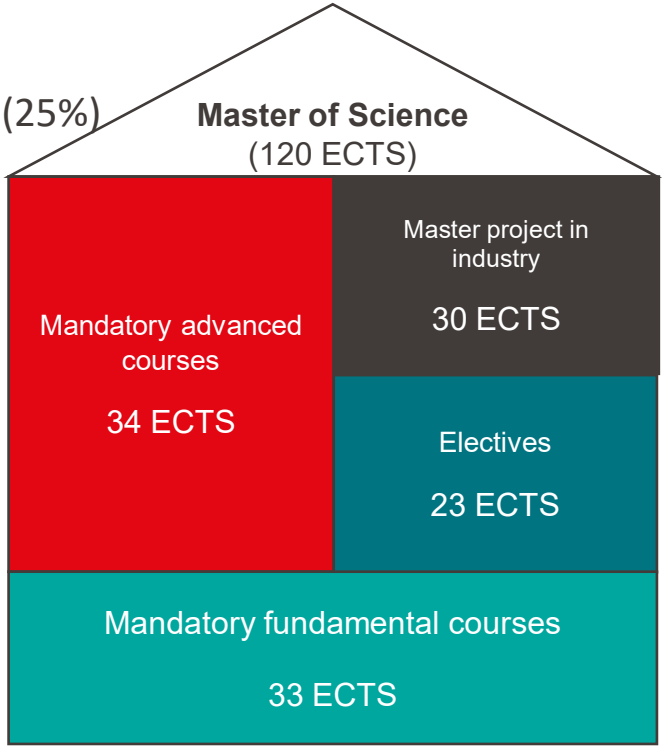
Evooq
Quantitative Analyst

PRINCETON UNIVERSITY
Ph.D Financial Mathematics

17 96
LOMBARD ODIER
LOMBARD ODIER DARIER HENTSCH
Risk Manager

3. MFE Program structure 24-25

- Specialized master program
  - Three semesters of coursework (75%)
  - 6 months internship in industry and master thesis (25%)
- Will lead to accredited engineer title
- Courses are entirely taught in English
- No out mobility or minor



Block of mandatory fundamental courses

Accounting for finance, introduction to finance, optimization, econometrics, probability & stochastic calculus
+ SHS

Mandatory fundamental courses
33 ECTS

Block of mandatory advanced courses

Derivatives, advanced derivatives, ethical behavior in the financial industry, macroeconomics, interest rate & credit risk models, investments, machine learning in finance, quantitative risk management

Mandatory advanced courses

34 ECTS

Group electives

Electives

23 ECTS

Project Master in Industry

Master project in industry

30 ECTS

Students acquire industry experience & knowledge in conducting a larger project (master thesis)

➢ **Specific content depending on host firm & thesis topic**

Examples of master projects :

- Internal control systems failures: analysis and suggestions
- Refined View on Balance Sheet Stress Testing
- Explainable Machine Learning for Asset Allocation
- Valuation and Optimization in Transitioning Electricity Markets
- Estimating and forecasting the tails of non-normal distributions

4. Admission Conditions

- **Online application (from mid-November to December 15th or from December 16th to March 31st)**
- **Minimum average grade of 4.5 over the entire Bachelor's**
- **Necessary but not sufficient condition: the motivation will also be assessed!**
- **The MTE master is an engineering degree**

Contact

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EPFL CDM MFE

ODY 3.18 (Odyssea)

Station 5

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Frequently Asked Questions

- **Difference with other programs** ?
  - UNIL: Larger classes (no selection), less technical, not designed for students without background in economics/finance
  - ETH/UNIZ: Shorter program with only 60ECTS of courses and no internship. Also slightly less technical
- **Placement?** almost all (>92%) students find jobs within six month of graduation
- Want to talk to our students: www.fes.epfl.ch

4. Questions

mfe@epfl.ch