

- Faculté des sciences économiques
- [www.unine.ch/seco](http://www.unine.ch/seco)

### Quantitative Methods for Finance (5AF2041)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en finance</b>	<b>Cours: 2 ph</b>	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

#### Période d'enseignement:

- Semestre Automne

#### Equipe enseignante

Professor Tim Kroencke  
Institute of Financial Analysis  
Rue A.-L. Breguet 2  
CH-2000 Neuchâtel  
Tel. +41 32 718 1385 Email: [tim.kroencke@unine.ch](mailto:tim.kroencke@unine.ch)

Emanuele Guidotti, teaching assistant, PhD candidate in finance  
Institute of Financial Analysis  
Rue A.-L. Breguet 2  
CH-2000 Neuchâtel  
Tel. +41 32 718 1591 Email: [emanuele.guidotti@unine.ch](mailto:emanuele.guidotti@unine.ch)

#### Contenu

We learn how to apply basic quantitative methods to common problems in finance. The focus of this course is on how to implement familiar methods and the interpretation of empirical results, as required both in practice and research in finance.

- 1: Statistical Concepts, Returns, and Risk
- 2: Probability Concepts and Probability Distributions
- 3: Sampling and Estimation, Hypothesis Testing
- 4: Linear Regression in Finance
- 5: Multiple Regression in Finance
- 6: Basics in Time-Series Analysis
- 7: Basics in Cross-Sectional Analysis
- 8: Introduction to Machine Learning in Finance

#### Forme de l'évaluation

Final: two-hour written exam (100%) during the exam session  
Re-take: two-hour written exam (100%) during the exam session

Allowed tools (written exam): Simple calculator, cheat sheet (one page DIN-A4, back and front, handwritten).

In case of violation of these rules, the students are in situation of fraud and the unauthorized items will be removed. The exam could be deemed as failed.

#### Documentation

- Introductory Econometrics for Finance, Chris Brooks, Cambridge University Press 2019.
- Financial Econometrics: Models and Methods, Oliver Linton, Cambridge University Press 2019.
- CFA Level 1, Readings 6, 7, 8, 9, 10, 11
- CFA Level 2, Readings 6, 7, 8, 9

#### Pré-requis

Solid knowledge of fundamentals in statistics and econometrics (Bachelor level)

#### Forme de l'enseignement

Lectures and exercises (mainly excel-based exercises and some advanced R tutorials)

- Faculté des sciences économiques
- [www.unine.ch/seco](http://www.unine.ch/seco)

## **Quantitative Methods for Finance (5AF2041)**

### **Objectifs d'apprentissage**

Au terme de la formation l'étudiant-e doit être capable de :

- Communicate the results of a quantitative analysis in finance to experts and non-experts
- Apply quantitative methods to financial data
- Assemble an appropriate quantitative method and recognising potential limitations
- Describe important research methods in finance
- Select the appropriate quantitative methods, given a specific problem and properties of the data
- Formulate finance problems in a statistical model
- Demonstrate competency in making evidence-based judgements

### **Compétences transférables**

- Develop numeric and quantitative skills.
- Develop critical thinking skills
- Identify appropriate solutions
- Communicate effectively in the context of a given audience
- Review your priors by reflection and experience