

- Faculté des sciences économiques
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## Portfolio Optimization (5AF2023)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en finance, orientation analyse financière (avant 2013)</b>	<b>Cours: 2 ph</b>	<b>cont. continu</b>	<b>3</b>
<b>Master en statistique</b>	<b>Cours: 2 ph</b>	<b>cont. continu</b>	<b>3</b>

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

### Période d'enseignement:

- Semestre Automne

### Equipe enseignante:

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&  
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### Objectifs:

This course examines portfolio theory from a practitioner's perspective. We build on Markowitz Mean-Variance theory, and then take the point of view of a portfolio manager who is willing to put the model into practice. We first show with concrete examples that this theory cannot be applied straightforwardly to "real-life" portfolios. Conventional Markowitz optimization often returns portfolios with little investment intuition and is extremely sensitive to parameters' estimation. The student knows and is able to use different methods proposed in the literature to overcome these problems. Factor models, the Ledoit and Wolf's estimator of the covariance matrix, the Michaud's "resampled efficient frontier", or the Black and Litterman model belong to the covered material.

### Contenu:

1. Markowitz Mean-Variance Theory
2. How Well Does Markowitz Work in Practice?
3. A First Step Towards Practical Implementation: The Single-Index Model
4. Multi-Index Models and Averaging Techniques
5. Robust Estimation: the Variance-Covariance Matrix
6. Robust Estimation: the Vector of Expected Returns
7. Michaud: "Efficient Asset Management"
8. The Black-Litterman Asset Allocation Model.

### Forme de l'évaluation:

Project: 80%, exercises: 20%.  
Re-take session (September): 2-hour written exam (100%).

### Documentation:

Reilly F. and K. Brown, Investment Analysis and Portfolio Management, 7th edition, Thomson.  
Elton E., M. Gruber, S. Brown and W. Goetzmann, 2003, Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.

### Pré-requis:

None.

### Forme de l'enseignement:

Lectures: 2 hours per week.