

Electronic Markets

**ECTS** : 3

**Description du contenu de l'enseignement :**

This course is a presentation of financial markets, trading mechanisms and their evolution dedicated to advancing the understanding and practice of electronic markets. A particular attention will be dedicated to optimal trading and execution technics but also on the use of algo trading strategies by market participants (who do what).

**Session 1:** Definitions, Evolution of financial markets & regulation, Traders/investors and algo trading businesses (Execution, Market Making, Investing)

**Session 2:** Algorithms type, objectives, uses and users

**Session 3:** Orders, strategies, trading platforms and smart orders routers

**Session 4:** Trading Cost (TCA) and Performance Analyses

**Session 5:** Using algos for investing and market making

**Session 6:** Introduction to execution Algo + Around the Almgren-Chriss model

**Session 7:** Dynamic programming and trading strategies

**Session 8:** Limit order book and market making

**Session 9:** Reinforcement learning and beyond

**Compétence à acquérir :**

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**Mode de contrôle des connaissances :**

Group project: report + defense (individual evaluation)

**Bibliographie, lectures recommandées :**

- Almgren R. and N. Chriss. [Optimal execution of portfolio transactions](#) Journal of Risk, 3(2):5–39, 2000.
- Bacidore, J. R., 2020, Algorithmic Trading Method: A practitioner's guide, TBG Press New York, 229 pages.
- Chan E., Algorithmic Trading- Winning Strategies and Their Rationale, Wiley, 2013, 207 pages.
- Guéant O., 2016, The Financial Mathematics of Market Liquidity: From Optimal Execution to Market Making, Chapman and Hall, 302 pages.
- Kissell, R., 2020 Algorithmic Trading Method: Applications Using Advanced Statistics, Optimization, and Machine Learning Techniques, Academic Press Inc, 2nd Edition, 612 pages.
- Lehalle C. A. and S. Laruelle, 2018, Market Microstructure in Practice, World Scientific, 2nd Edition, 339 pages.
- Johnson B, 2010, Algorithmic Trading & DMA, Myeloma Press, 574 pages.
- Sutton, R.S., Barto, A.G.: [Reinforcement Learning: An Introduction. Adaptive computation and machine learning](#), MIT Press, Second edn. (2018).

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