

## **Financial Mathematics and Analytics (61224)**

**Instructors: A.YANNACOPOULOS**

Elective Course, 4<sup>th</sup> semester, 5 ECTS units

Course level: Graduate (MSc)

Language: Greek (or English if foreign students attend)

### **Course Description**

**The aim of this course is to introduce students to financial mathematics with data analytics within the Python ecosystem.**

Introduction to quantitative theoretical and practical techniques, tools and methods of financial mathematics and financial and risk analytics, introduction to the structure of financial markets and the nature of financial assets, data and modeling, asset pricing models, derivative products, bonds, portfolio theory and introduction to risk management techniques. Computational methods and techniques for the above using the Python ecosystem.

Short introduction to the Python ecosystem using scripts supplied by the instructor (no prior knowledge of python required).

### **Prerequisites**

None.

### **Target Learning Outcomes**

To familiarize students with quantitative and computational techniques for financial market analytics as well as with the Python ecosystem

### **Recommended Bibliography**

- Hull, J. C. (2015) Options, Futures, and Other Derivatives, 9th edition, Pearson
- McDonald, R. L. (2013), Derivatives Markets, 9th edition, Prentice Hall
- Shreve, S. (2005), Stochastic calculus for finance Vols. I and II, Springer
- Γιαννακόπουλος Α. (2014) Στοχαστικά Χρηματοοικονομικά (σημειώσεις)
- A.N.Yannacopoulos, Course notes and computational material
- Simone Calogero, A first course in Option pricing Theory, SIAM, 2023

### **Teaching and Learning Activities**

In vivo or by distance teaching, computational applications.

### **Assessment and Grading Methods**

Essays and mini projects within the term.