

## Faculty of Economic, Social and Political Sciences



### ACTU2130 Mathematics of financial markets

[45h] 4.5 credits

**Teacher(s):** Pierre Devolder  
**Language:** French  
**Level:** Second cycle

#### Aims

The aim of this course is to present the basic methods of financial deterministic mathematics. At the end of the course, the students must be able to price simple financial products and manage the risks associated with different interest rates.

#### Main themes

The main theme is the study of interest rates products.

After an introduction devoted to the interest theory, the theory of loans and bonds is developed. The management of interest rates risks is finally analysed.

#### Content and teaching methods

##### Content

1. Generalities on interest
2. Principle of simple request
3. Principle of compound interest
4. Financial structure with more than 2 cash flows - simple interest
5. Financial structure with more than 2 cash flows - compound interest
6. Annuity
7. Loans
8. Bonds
9. Term structure of interest rates
10. Spot rates
11. Risks of interest rates
12. Duration, convexity and immunisation

#### Other credits in programs

<b>ACTU21MS</b>	Première année du master en sciences actuarielles, à finalité spécialisée	(4.5 credits)	Mandatory
<b>MAP23</b>	Troisième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(4.5 credits)	