

## MASTER Economics Actuarial science I

Contacts	Description	Information
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Xavier GUERRAULT xavier.guerrault@univ-amu.fr	Code: PA-ME5BEC-BECCV28A Domain: Law, Economics, Management	Department: Faculty of Economics and Management <i>Last modification: 19/07/2018</i>

### CONTENT

The aim of the course is to present the main issues related to the pricing of insurance products as well as the fundamental differences between life and non-life insurance.

#### Course outline :

Chapter 1 – Introduction to actuarial science (R. Bourlès, 6h)

1. Life insurance model
  - 1.1 Mortality risk and pricing errors
  - 1.2 Main insurance products : fair premiums and prudent pricing
  - 1.3 Actuarial Present Value and Notations
  - 1.4 Exercises
2. Non-life specificities
  - 2.1 Provisioning
  - 2.2 The variability of non-life risks
  - 2.3 The role of financial markets

Chapter 2 – Life Insurance, saving products, and accounting (X. Guerrault, 9h)

1. Introduction on Mathematical Reserves
2. Saving contracts and performance distribution mechanisms
3. Performance indicators for an insurance company

Chapter 3 – Non-Life Insurance (F. Derbez and R. Mouyrin, 9h)

1. Introduction (definition and example of claims)
2. Mechanisms of Non-Life Insurance
  - 2.1. Generalities
  - 2.2 Technical indicators
3. Pricing (modeling and examples)
4. Loss experience and reserving

- 4.1 Definitions
- 4.2 Deterministic methods

### PROFESSIONAL SKILLS

- How to price simple life insurance products
- Understand the accounting specificities of insurance companies
- Know the current issues and the current regulations of the insurance market.

### BIBLIOGRAPHY

- Tosetti A., Weiss F. et Poncelin T., Les outils de l'actuariat vie, Economica
- Charpentier A. et Dutang C., L'Actuariat avec R

### ORGANISATION

This course is given through 24 hours of lecture at Ecole Centrale Marseille. The first six hours are taught by Renaud Bourlès, the remaining being instructed by practitioners from AXA.

### FUNDAMENTAL PREREQUISITES

Knowledge in probability (in particular conditional expectation).

### VOLUME OF TEACHINGS

- Lectures: 24 hours

### TRAINING

**Master's degree: Economics**

- Quantitative finance and insurance

