

27538 - Actuarial and Insurance Operations

Información del Plan Docente

Academic Year	2017/18
Faculty / School	109 - Facultad de Economía y Empresa
Degree	449 - Degree in Finance and Accounting
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The Actuarial and Insurance Operations course comprises 6 ECTS with 60 class hours of theoretical and practical sessions.

Given the operational nature of the course, both theoretical and practical sessions will be illustrated with actual examples,

27538 - Actuarial and Insurance Operations

news related to the topics of the course or debates on these issues. The classes are intended to be participatory.

The practical classes consist of practical cases proposed by the teacher, to be jointly worked by the students and the teacher and finally resolved by the teacher.

5.2.Learning tasks

1 Participatory lectures (30 hours). In these sessions the lecturer presents and explains the basic concepts of the lessons, including some examples, cases or news which may be related to the current topic. In these sessions, student participation will be encouraged to discuss the most important concepts analyzed in each session.

2 Problem-solving sessions. (30 hours) Students will have sessions for solving the exercises and cases proposed by the teacher.

3 Office hours and tutorials: Students will have office hours available for consultation about both theoretical and practical issues related to the subject.

4 The use of Moodle2 (<https://moodle2.unizar.es>). This application is used to provide students with information, handouts and notes containing the basic contents of the subject.

5 Exams: the procedure is described in the section "Assessment tasks".

5.3.Syllabus

LESSON 1 Fundamentals of actuarial mathematics.

In this lesson, the principles of insurance and the requirements for its further development are established. The concept of risk premium is presented, as well as the types of risks, the responses to risk, the main aim of actuarial mathematics, its economic, financial and stochastic fundamentals, and the idea of actuarial financial equivalence between insured and insurer.

PART I. LIFE INSURANCE OPERATIONS AND PENSION PLANS

LESSON 2 Actuarial actualization and capitalization processes.

The objective of this lesson is the calculation of the current actuarial values, given their random nature, the proposal of actuarial equivalencies and the calculation of the reserve of an operation. The actuarial values of annuity payments associated with survival are estimated. The main biometric concepts and the main commutation symbols are also presented.

Practical classes will begin after this lesson and will remain for the rest of the course.

LESSON 3 Life annuities with m thly payments (payments made more frequently than once a year)

27538 - Actuarial and Insurance Operations

The aim of the lesson is to understand the meaning of life annuities with payments made more frequently than once a year and which are the changes in actuarial basis that may be applied to the calculations involved. These actuarial values and fractionary annuities are calculated assuming constant periodic payments

LESSON 4 Life insurance operations

This lesson studies the concept of life insurance, its fundamental elements for evaluation, classification, usual terms and conditions, premium calculation, additional benefits and guaranteed values.

LESSON 5 Life insurance pricing

The main components of insurance premium are described. The main cases of life insurance contracts in case of death are analytically studied. Life insurance contracts in case of survival and mixed insurance contracts are also priced.

LESSON 6 Profit sources in life insurance industry

The contribution of mortality factors, surcharges and profitability/return factors in order to achieve profit in the insurance industry is studied. The concepts of contingency fund and distributable surpluses as well as the most common profit sharing systems are also described.

LESSON 7 Group insurance and social insurance

In this issue covers the concepts of collective, actuarial equivalence between rights and contributions (collective equivalence) and the importance of salary as an operating variable. The most important characteristics of social insurance are dealt and the most important group actuarial systems are explained.

LESSON 8 Pension plans and pension funds.

Individual pension plans, workplace pension plans and associated pension plans are considered in this lesson. Defined contribution plans and defined benefit plans are valued.

LESSON 9 Joint and survivor annuities. Disability.

In this lesson a wide range of operations based on joint and last survivor annuities is valued. In particular, widows' and orphans' annuities are calculated. Particular attention to the state of invalidity is provided, examining the specific information required to assess this contingency and using it in order to carry out the valuation.

PART II. GENERAL INSURANCE OPERATIONS

LESSON 10 General Insurance

Since the study of non-life insurance is far from life insurance, this lesson highlights the main differences between these two insurance types, as well as classifies the most common contingencies covered by general insurance and describes

27538 - Actuarial and Insurance Operations

the most common concepts to be used in the assessment of general insurance operations.

LESSON 11 Distribution of the number of claims and the amount of a claim

This lesson explains the most common probability distributions in order to calculate the number of expected claims of a general insurance contract, considering or not the possible existence of a contagion effect. It also explains the most common probability distributions to compute the average amount of different types of claims.

LESSON 12 Pricing general insurance. Credibility theory

The aim of this chapter is to show the components of the premium of general insurance policies, the application of actuarial equivalence to non-life insurance contracts, and the description of the different systems of participation of the policyholder in the guarantee (insurance with excess, first loss insurance...), showing their advantages and disadvantages.

LESSON 13 Reserves or technical provisions

The magnitudes of stability and solvency are key elements in managing the insurance sector. Special attention to reserves or technical provisions is given in this lesson and some calculation methods are presented.

ITEM 14 Reinsurance

This lesson describes the basic concepts related to reinsurance, the main risk sharing systems, premiums and claims sharing systems and the main calculation methods applied to each of them.

5.4.Course planning and calendar

The calendar of classes will be announced on the website of the Faculty (fecem.unizar.es).

5.5.Bibliography and recommended resources

[BB: Bibliografía básica / BC: Bibliografía complementaria]

- [BB] Benito Rivero, José Antonio. El reaseguro / José Antonio Benito Rivero . - [1a. ed.] Madrid : Mapfre, [2001]
- [BB] Gray, Roger J.. Risk modelling in general insurance : from principles to practice / Roger J. Gray, Susan M. Pitts. . Cambridge ; New York : Cambridge University Press, 2012.
- [BB] Nieto de Alba, Ubaldo. Matemática actuarial / Ubaldo Nieto de Alba, Jesús Vegas Asensio . - 1ª ed., 1ª reimpr. Madrid : MAPFRE, D.L. 2001
- [BB] Peña Esteban, J. Iñaki de la. Planes de previsión social / J. Iñaki de la Peña Esteban Madrid : Pirámide, 2000
- [BB] Seguros de vida, accidentes, salud y planes de pensiones / coordinador de la obra, José Mª Hurtado . - [1a. ed.] Madrid : Mapfre, [2000]
- [BB] Villalón, Julio G.. Matemática de las operaciones de seguros / Julio G. Villalón Madrid : Tebar Flores, D.L. 1989

Listado de URL

- Lista de enlaces para la investigación sobre seguros [23-06-2015]
[<http://www.verisk.com/iso-home/iso-links-for-insurance-research.html>]
- Sitio web de la Dirección General de Seguros y Fondos de Pensiones [23-06-2015] [<http://www.dgsfp.mineco.es/>]