27538 - Actuarial and Insurance Operations

Syllabus Information

Academic Year: 2020/21
Subject: 27538 - Actuarial and Insurance Operations
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.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures (30h), practice sessions (30h), tutorials, autonomous work, study and assessment tasks (90h).

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

4.2.Learning tasks

The course 6 ECTS with 60 class hours that includes the following learning tasks:

- 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.
- Problem-solving sessions. (30 hours) Students will have sessions for solving the exercises and cases proposed by the teacher.
- Tutorials: Students will have office hours available for consultation about both theoretical and practical issues related to the subject.

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

The teaching methodology is planned to pivot around face-to-face classes. However, if necessary for health reasons, face-to-face classes may be taught online.

4.3.Syllabus

The course will address the following topics:
- Topic 1. Fundamentals of actuarial mathematics. In this topic, 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.

LIFE INSURANCE OPERATIONS AND PENSION PLANS
- Topic 2. Actuarial actualization and capitalization processes. The objective of this Topic 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 Topic and will remain for the rest of the course.
- Topic 3. Life annuities with monthly payments (payments made more frequently than once a year). The aim of the Topic 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.
- Topic 4. Life insurance operations. This Topic studies the concept of life insurance, its fundamental elements for evaluation, classification, usual terms and conditions, premium calculation, additional benefits and guaranteed values.
- Topic 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.
- Topic 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.
- Topic 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.
- Topic 8. Pension plans and pension funds. Individual pension plans, workplace pension plans and associated pension plans are considered in this topic. Defined contribution plans and defined benefit plans are valued.
- Topic 9. Joint and survivor annuities. Disability. In this Topic 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.

GENERAL INSURANCE OPERATIONS
- Topic 10. General Insurance. Since the study of non-life insurance is far from life insurance, this topic highlights the main differences between these two insurance types, as well as classifies the most common contingencies covered by general insurance and describes the most common concepts to be used in the assessment of general insurance operations.
- Topic 11. Distribution of the number of claims and the amount of a claim. This topic 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.
- Topic 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.
- Topic 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 topic and some calculation

methods are presented.

- Topic 14. Reinsurance. This Topic 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.

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Faculty of Economics and Business website (https://econz.unizar.es/)

4.5.Bibliography and recommended resources