VNIVERSITAT ID VALÈNCIA

COURSE DATA

Data Subject	
Code	43788
Name	Life insurance
Cycle	Master's degree
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
2171 - M.U. en Ciencias Actuariales y Financieras	Faculty of Economics	2	First term

Subject-matter		
Degree	**Subject-matter**	**Character**
2171 - M.U. en Ciencias Actuariales y Financieras	5 - Life insurance, health insurance and pensions	Obligatory

Coordination	
Name	**Department**
VENTURA MARCO, MANUEL	113 - Financial and Actuarial Economics

SUMMARY

The subject "Life Insurance" is located in the first semester of the second course and is taken after having had a first contact with the insurance field during the first course and having already addressed the study of one of its bigs areas, the "Nonlife Insurance".

In this way, when the mathematical and statistical foundations are reached, and the general context is known, one is able to approach one of the specific areas of the Master: Life Insurance.

Although students already have certain knowledge of insurance for the first course of the master's degree, the field of life insurance may find it practically unknown to them.

The subject of "Life Insurance" has its natural complement in two other subjects: "Health and long-term care benefits and insurance" and "Pension plans and systems", since there are numerous links between them, especially from "Insurance Life" towards the other two, because it is in this matter where the basic actuarial operations that are used in the rest are analyzed.

VNIVER$ITAT ⓓ ID VALÈNCIA

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

To make a suitable learning contents of this module the student should know the basic contents of Financial Economics and Introduction to Risk and have skills in using Excel Spreadsheet and others computer modeling programs.

OUTCOMES

2171 - M.U. en Ciencias Actuariales y Financieras

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

- Students should demonstrate self-directed learning skills for continued academic growth.

- Saber realizar una gestión integral del riesgo y alcanzar los conocimientos suficientes para dar respuesta a los riesgos actuales y a los que puedan surgir resultado del cambiante entorno económico, financiero y social, con vistas a dirigir y gestionar todo tipo de entidades financieras y aseguradoras.

- Conocer el código de conducta del Actuario así como las normas más relevantes de la práctica profesional.

- Comprender y ser capaces de desarrollar las técnicas matemáticas y estadísticas que resultan relevantes para el trabajo actuarial: modelos de supervivencia, siniestralidad, tarificación, previsión y solvencia.

- Ser capaces de aplicar los criterios y principios de planificación y control actuarial, necesarios para el correcto funcionamiento de las operaciones que, en cada momento, ofrezcan las entidades de seguros, financieras o cualesquiera otras que impliquen transferencia y cobertura de riesgos.

LEARNING OUTCOMES

Overcoming the module should train students to:

- Raising and valuing annuities and insurance, both for a life and for life groups.
- Prepare technical bases, including premiums calculation, provisions, guaranteed values and surplus analysis.
- Manage assets and liabilities, reinsurance and the participation in profits of a life insurance company.
- Value a life insurance company.

DESCRIPTION OF CONTENTS

1. LIFE INSURANCE PRODUCTS

1.1.- Characterization of life insurance operations.

1.2.- Classification of life insurance.

1.3.- Technical basis.

1.4.- Approaches: from the Determinist paradigm to the Stochastic paradigm and the Modern Risk Management Approach (ERM).

1.5.- Mathematical models for random financial operations.

1.6.- Principle of actuarial equivalence.

1.7.- Mathematical reserve.

1.8.- The Actuarial Control Cycle and the Risk Management Process.

1.9.- Balance Sheet of a life insurance company.

1.10.- Institutional overview: Life insurance in the context of the Spanish insurance market.

2. BIOMETRIC MODEL OF HUMAN LIFETIME

2.1.- Life tables.

2.2.- Stochastic model: random variables and probabilities.

2.3.- Hazard rate, mortality laws and survival models.

2.4.- Heterogeneity and selection. Models for aggravated risks.

2.5.- Selected tables.

2.6.- Mortality dynamics: Dynamic tables

2.7.- Demographic risks and stochastic models.

2.8.- Regulations: authorized tables and Gender Directive.

3. TRADITIONAL LIFE INSURANCE BENEFITS ASSESSMENT FOR DEATH

3.1.- Actuarial factors: update factor and capitalization factor.

3.2.- Commutation Functions.

3.3.- Whole Life Insurance.

3.4.- Term Life Insurance.

3.5.- Temporary Renewable Insurance.

3.6.- Deferred Insurance.

3.7.- Variable benefits insurance in arithmetic progression.

3.8.- Variable benefits insurance in geometric progression.

3.9.- Loan amortization insurance.

3.10.- Group insurance.

4. TRADITIONAL LIFE INSURANCE BENEFITS ASSESSMENT FOR SURVIVAL

4.1.- Pure Endowment Insurance.

4-2.- Concept and classification of Actuarial Annuities.

4.3.- Constant Annuities.

4.4.- Variable Annuities.

4.5.- Annuities with variable interest rates.

4.6.- Annuities Insurance.

5. LIFE INSURANCE BENEFITS ASSESSMENT IN OTHERS CLASSIC MODALITIES

7.1.- Endowments Insurance.

7.2.- Fixed term insurance.

7.3.- Integral Insurance.

6. LIFE INSURANCE PRICING

6.1.- Pricing Process (Formation of the insurance price).

6.2.- Premium principles.

6.3.- Pure premiums

6.4.- Types of Expense-Loaded Premium: Inventory Premium, Zillmer Premium and Office Premium.

6.5.- Insurance with Premium Refund

7. RESERVING AND ALTERATIONS OF LIFE INSURANCE CONTRACTS

7.1.- Mathematical reserve at pure premium.

7.2.- Calculation of different types of reserves: inventory premium, Zillmer premium, commercial premium, in fractional periods and for balance sheet purposes.

7.3.- Alterations of a Life Insurance Contract: surrender, lapse, and advance payment of benefits. Conversion and rehabilitation of policies.

8. MODERN LIFE INSURANCE, INTEREST RATES, PARTICIPATING POLICIES AND YIELD TO MATURITY

8.1.- Technical and market interest rate.

8.2.- Sensitivity of provisions to changes in interest rates.

8.3.- Unit-Linked Insurance and related modalities.

8.4.- Participation mechanisms: Main types and methods of distribution.

8.5.- Flexible insurance: "Universal" life insurance.

8.6.- After Tax Yield to Maturity .

9. GLOBAL ANALYSIS OF LIFE INSURANCE BUSINESS FIRMS

9.1.- Valuation of life insurance portfolios.

9.2.- Stability, solvency and capital requirements.

9.3.- Reinsurance and alternative risk transfer mechanisms.

9.4.- General investment principles for life insurance companies.

9.5.- Management of assets and liabilities.

9.6.- Analysis of the surplus and the expected annual result.

9.7.- Market-Consistent Valuation.

9.8.- Regulatory View: IFRS and Solvency II.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	30,00	100
Attendance at events and external activities	10,00	0
Development of group work	10,00	0
Development of individual work	10,00	0
Study and independent work	20,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	5,00	0
Resolution of online questionnaires	5,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

During the course, the contents of the program will be worked on, synchronizing theoretical contents with exercises and practical assumptions, and various tasks will be proposed that the student will have to deliver in the form and date that is detailed throughout the development of the course. For this purpose, all available resources (blackboard, transparencies, cannon, computer, etc.) that are considered most appropriate to the correct achievement of the proposed objectives will be used in each case and according to the needs.

In general, the theoretical part will be taught through the methodology of the participative lecture, in which the teacher will highlight the fundamental aspects of each topic and guide the study through the relevant bibliography, which inexcusably must go to complete and deepen the subject.

The practical classes consist of raising questions and exercises of a character applied to the economic, financial and actuarial field, which the student must resolve by proceeding, where appropriate, to the relevant modeling and discussion of the solution.

The practical classes will be carried out, in some cases with computer support, so that the student can

have an updated view of the use of the packages and techniques, increasingly extended in all the areas mentioned.

In the practical classes will solve questions and problems previously raised in the theoretical classes, except in some cases, in which given the practical nature of the subject taught the same only in the practical session.

As far as possible, group tasks will be carried out.

The available teaching material can be accessed from the virtual classroom, http://aulavirtual.uv.es

EVALUATION

The subject will be evaluated according to:

- A written exam, which may consist of theoretical questions as well as problems and/or real cases.

- The activities developed by the student throughout the academic period, such as the preparation of papers, the resolution of exercises or problems, the performance of tests, the presentation of reports, oral presentations, etc.

The written exam will represent 60% of the final grade and the course's continuous evaluation the remaining 40%. In any case, to pass the subject it will be necessary to obtain a minimum grade of 5 out of 10 and the written test must exceed a minimum established.

In order for the proposed activities and tasks to be evaluated, they must be submitted on the date and in the manner stipulated for each of them.

Observations:

- The grades obtained will be maintained with the delivery of tasks and continuous evaluation during the course, in case the subject is not passed in the first call (they are considered non-recoverable, not being able to deliver for this call the tasks not exceeded or not delivered during the course).

- In the second call the same evaluation criteria will be used for the first call.

REFERENCES

Basic

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