

**COURSE DATA****Data Subject**

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Code</b>          | 35964                                |
| <b>Name</b>          | Introduction to actuarial techniques |
| <b>Cycle</b>         | Grade                                |
| <b>ECTS Credits</b>  | 4.5                                  |
| <b>Academic year</b> | 2020 - 2021                          |

**Study (s)**

| <b>Degree</b>                           | <b>Center</b>        | <b>Acad. year</b> | <b>Period</b> |
|-----------------------------------------|----------------------|-------------------|---------------|
| 1315 - Degree in Finance and Accounting | Faculty of Economics | 4                 | First term    |

**Subject-matter**

| <b>Degree</b>                           | <b>Subject-matter</b>         | <b>Character</b> |
|-----------------------------------------|-------------------------------|------------------|
| 1315 - Degree in Finance and Accounting | 23 - Year 4 optional subjects | Optional         |

**Coordination**

| <b>Name</b>              | <b>Department</b>       |
|--------------------------|-------------------------|
| CABALLER TARAZONA, MARIA | 110 - Applied Economics |

**SUMMARY**

*Introduction to actuarial techniques* is assigned to the area of Quantitative Methods for Economics and Business and is taught in the first term of the fourth year of the Degree in Finance and Accounting. *Introduction to actuarial techniques* is eminently a practical subject of optional training, where the use of the computer is fundamental.

This subject will allow students to enter, through the resolution of cases and the understanding of the theoretical foundations, in the world of risk study, one of the key elements in the field of finance and insurance. The subject will offer principles for the correct management and identification of risks (qualitative methods) and their numerical evaluation (quantitative methods).

By studying this subject the student will acquire some basic rudiments for the actuarial calculation where the economic quantification of the loss associated with the materialisation of a risk can be random, as well as its possible occurrence or the temporary moment in which it can take place. Likewise, it will delve into the concepts of chance and uncertainty that are present in all the financial and economic processes of current societies.



Briefly, some of the contents to be developed in the subject are the following: the mortality table, actuarial functions in life insurance, accident models, distributions for the amount and number of claims and the R statistical software.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

Sin requisitos previos.

Se recomienda, no obstante, que para cursar esta asignatura con éxito el estudiante tenga unos niveles básicos de matemáticas, matemáticas financieras y estadística (los conocimientos que corresponden a los cursados en las materias correspondientes del grado de finanzas y contabilidad de los cursos anteriores), y, principalmente, tener ilusión por aprender. La materia es eminentemente aplicada.

## OUTCOMES

### 1315 - Degree in Finance and Accounting

- Conocer y comprender las herramientas cuantitativas básicas para la gestión de seguros.
- Conocimiento de las herramientas informáticas más comúnmente utilizadas para el tratamiento y gestión de información cuantitativa.
- Capacidad para analizar instrumentos financieros internacionales y medir los riesgos que implican.
- Capacidad para resolver problemas básicos de índole actuarial.

## LEARNING OUTCOMES

The fundamental results that are expected to acquire with learning are:

- Ability to develop and defend a technical report in which basic actuarial reasoning is used.
- Ability to recognise a risk problem based on the observation and analysis of reality.
- Management of quantitative tools and their application to the management environment of certain risks.
- Ability to select a theoretical frame of reference for the development of the analysis.
- Knowledge and understanding of basic tools of a quantitative nature for analysis, diagnosis and prospection, such as mathematics, statistics and econometrics.



- To identify, classify, reason, argue and interpret the relationships between variables.
- Ability to identify the statistical and actuarial problems raised and apply the knowledge acquired for its correct treatment.
- Ability to search, select and assess the appropriate information to analyse.
- To be able to apply different methods and analysis techniques with uncertainty.
- Ability to solve basic actuarial problems.

## WORKLOAD

| ACTIVITY                                     | Hours         | % To be attended |
|----------------------------------------------|---------------|------------------|
| Theory classes                               | 30,00         | 100              |
| Classroom practices                          | 15,00         | 100              |
| Attendance at events and external activities | 6,00          | 0                |
| Development of group work                    | 15,00         | 0                |
| Development of individual work               | 18,00         | 0                |
| Study and independent work                   | 28,50         | 0                |
| <b>TOTAL</b>                                 | <b>112,50</b> |                  |

## TEACHING METHODOLOGY

The teaching methodology will be varied and will use different approaches:

- Exhibition sessions by the teachers for each of the program topics. In these sessions the concepts, analytical interdependencies, theoretical notions and key empirical questions that students must learn to handle will be explained.
- Group discussion and analysis sessions from different materials that aim to raise new questions about the contents of the syllabus of the subject and to deepen the understanding of the contents of the subject.
- Realisation of group or individual works for the elaboration of reports or the resolution of cases that the teaching staff may raise. The specific guidelines for the realisation of possible work will be specified by the teachers in class according to the concerns and interests of the students and explained in detail in class. The work will be the subject of guidance, monitoring and supervision by the teachers.
- Possible attendance and active participation in conferences which are organised as complementary activities or related to the subject throughout the semester.



## EVALUATION

It will be expressed by numerical grades in accordance with the provisions of the regulations (RD1125 / 2003, September 5) establishing the European credit system and the grading system in official university degrees valid throughout the National territory.

Individual and group works carried out by students throughout the course will be evaluated, both in terms of the acquisition of specific and generic competences and in relation to the knowledge of the module.

The teaching staff, depending on the academic circumstances of the subject, will select one or more of the following instruments for the evaluation:

- Written exams: including objective or semi-objective tests, problem solving, short answer tests, essay and resolution of cases or other similar options.
- Oral exams: including oral tests, interviews, debates or oral presentations in the classroom or other similar options.
- Completion of tasks and submission of reports on specific topics that may arise during the course.
- Observation: application of observation scales and registration of students' attitudes in the development of tasks and activities related to competencies.

The specific criteria and processes that will be used for the evaluation, as well as their specific numerical weighting, will be based on the number of students finally enrolled and will be published in the detailed teaching guide that students can find in the virtual classroom of the course.

## REFERENCES

### Basic

- Ayuso, M., Corrales, H., Guillen, M. y Rojo, J.L., (2007), Estadística Actuarial Vida. Ed. U.B.
- Crawley, M.J. (2013), The R Book, Jonh Wiley & Sons.
- Ferreira, E. y Garín, M. A. (2010), Estadística Actuarial: Modelos Estocásticos. Ed. Univ. País Vasco.
- Palacios, H.E. (1996), Introducción al cálculo actuarial, Ed. Mapfre, Madrid.
- Paradis, E. (2003), R para principiantes. [http://cran.r-project.org/doc/contrib/rdebuts\\_es.pdf](http://cran.r-project.org/doc/contrib/rdebuts_es.pdf)
- Pavía, J.M. (2011), 101 Ejercicios resueltos de Estadística Actuarial Vida, Ed. Garceta.

### Additional

- Benjamin, B. y Pollard, J.H. (1980), The analysis of mortality and other actuarial statistics, Ed. Heinemann, London.



- Bowers, N. L., Gerber, H. U., Hickman, J. C. y otros (1990). Actuarial Mathematics, Society of Actuaries. Itaca, Illinois.
- De Vylder, F. E. (1997). Life Insurance Theory: Actuarial Perspectives. De. Kluwer Academic Publishers.
- Elandt-Johnson, R. C. Y Johnson, N. L. (1999). Survival Models and Data Analysis. Ed. Wiley.
- Gil Fana, J.A. Heras Martínez, A. y Vilar Zanón, J.L. (1999). Matemática de los Seguros de Vida. Ed. Mapfre.
- Newbold, P. (2008), Estadística para los negocios y la economía, Ed. Prentice Hall, Madrid.

## **ADDENDUM COVID-19**

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

El modelo docente adoptado en esta asignatura se rige por la presencialidad. El escenario de no presencialidad sólo se prevé como excepción ante posibles casos de confinamiento de la población u otros que imposibiliten la asistencia a clase, siempre que sean decretados por las autoridades competentes. En caso de que se dieran estos supuestos de no presencialidad se utilizarán las diferentes opciones de las que dispone la Universidad de Valencia para impartir la docencia on-line, pudiendo modificarse también el sistema de evaluación y la ponderación aplicable a los diferentes apartados evaluables