COURSE DATA

DATA SUBJECT

Code: 43783
Name: Programming in applied visual basic
Cycle: Master's Degree
ECTS Credits: 3
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2171 - Master's Degree in Actuarial and Financial Sciences	Facultat d'Economia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2171 - Master's Degree in Actuarial and Financial Sciences	Finance and introduction to insurance	COMPULSORY

COORDINATION

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SUMMARY

The subject of ***Finance and Introduction to Insurance*** is located in the second semester of the first year after the study is attended two previous materials. One of them, dedicated to lay the technical and methodological support in which much of the later developments, and one designed to place students at the stage in which they develop their professional activity.

Thus, achieved mathematical and statistical foundations, and known general context is able to address in the second semester of a Master's specific areas: the Finance in which is located ***Programming in Visual Basic for Applications***.

The ***Core Syllabus*** for actuarial training in Europe (2005), published by the European Advisory Group and approved by the ***Instituto de Actuarios Españoles***, established between the training requirements of the Preliminary Phase ***Computing*** topic, with the aim of ***provide a solid foundation in modern computational methods needed for the work of the actuary***, hoping that the student has a working knowledge of appropriate ICTs for that need.

Following the training requirements of the ***Core Syllabus***, we develop the essentials of programming for the design of actuarial and financial applications using Visual Basic for Applications in Excel.

Microsoft Excel is a popular general-purpose program, with wide and varied possibilities, which is part of the Microsoft Office package, readily available in the professional field of actuarial and financial expert. On the other hand, ease of use and availability are key to learning a first computer programming language, and Excel VBA has the advantage of being available and, being integrated, accessible from Microsoft Excel, to which is attached a environment friendly: the Visual Basic Editor (VBE) and the leaves themselves Workbooks in Excel, which allows to cover the lens review, offering great possibilities in the financial and actuarial modeling capacity, efficiency, and automation of calculations and procedures.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

For proper training in the contents of this course the student should know the contents typical of Financial Economics is often taught in social science studies, as well as having a medium level of skill in using the Excel Spreadsheet.

COMPETENCES / LEARNING OUTCOMES

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Ser capaces de construir modelos adecuados al entorno económico empresarial a partir de las posibilidades que ofrecen las modernas tecnologías de la información y de la computación.

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 demonstrate self-directed learning skills for continued academic growth.

DESCRIPTION OF CONTENTS

1. Structure and application development with VBA Excel

Introduction to VBA Excel.

The development environment. VBE: The VBA Editor.

Basic elements of VBA.

Modelling in Excel and modelling in VBA Excel.

2. The VBA programming language.

Writing rules.

Variables, data types, and constants.

Arrays.

Operators.

Integrated functions.

3. Procedures and custom functions.

Types of procedures.

Sub Procedures.

Procedures calling other procedures.

Custom Functions (Function Procedures).

Functions with vector and matrix arguments.

Function calls functions and procedures and vice versa.

4. Programming Structures

Introduction to control statements.

Bifurcations and decisióon structures.

Loops.

Nested structures.

5. Objects and collections.

Objects and collections: properties and methods.

Instructions to handle objects and collections.

Object Browser.

Excel Objects.

Referencing, names yand formulas in VBA.

Predefined dialog box for messages in VBA.

Integrated dialog box.

6. Controls, properties and events.

Most common controls description.

Properties.

Events.

7. Data management and modelling applications

Advanced Models in VBA Excel.

Interaction with other applications.

Data management.

Data Analysis and Pivot Tables.

Optimization. Solver and VBA Solver functions.

Simulaction.

Effective design and applications professional appearance

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	15,00
Classroom practices	15,00
Total hours	**30,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	18,00
Independent study and work	13,00
Preparation of lessons	8,00
Preparation for assessment activities	6,00
Resolution of case studies	0,00
Total hours	**45,00**

TEACHING METHODOLOGY

During the course, the teacher will work simultaneously the theoretical content with the practical one, with the focus over the design and development of actuarial and financial applications by Excel VBA.

The teacher will present the key aspects of each activity and will guide the study through the relevant literature, which the student must read to complete and delve into the matter. The student must actively participate in the development of the activity by discussing the solution, and using appropriate computer techniques for resolution.

In addition to these classroom activities, students must perform other learning-oriented independently as individual study, preparation of evaluation activities, or conducting individual or group work. For the successful implementation of these activities, mentoring, conducted either individually or in groups, is a particularly important teaching resource because it allows the teacher to know the level of achievement of the collective, and personalized guidance to students in their training program. Consequently, throughout the formative period of the course is recommended and encourages the use of this teaching resource.

The Aula Virtual, http://aulavirtual.uv.es, facilitates the development of these methodologies as it collects all teaching materials and enables fluid communication between teacher and student.

EVALUATION

Evaluation will be based on:

- A final examination or synthesis test that consist of an objective test, multiple choice, and practical exercises.
- Continuous evaluation based on:
  - Class attendance and participation in classroom learning activities.
  - Follow-up testing.
  - A group task assigned by the teaching team.

The written exam or synthesis will 50% of the final grade, continuous assessment the remaining 50%.

In any case, to pass the course will be required to obtain a minimum score of 5 out of 10 and the synthesis test must also be obtained a minimum score of 5 out of 10. Given the characteristics of the Oriented Learning Project, it is not recoverable. It requires the participation of 2 or more students and the rest of the teams to see the presentation of the Project. In second call, the existence of the minimum number of students to carry out a new Project would not be guaranteed, nor the existence of a public for the exhibition of the project. Only the rest of the continuous assessment tasks will be recoverable, on second call, under the conditions indicated by the teaching team of the subject.

The proposed activities and tasks will be evaluated, only if they will delivered on the date and manner in which stipulated. Also, the use of illegal or fraudulent methods (copying, plagiarism, impersonation, etc.) to obtain undeserved results in the evaluable tests will be penalized with a zero in the test note for those involved, subject to other penalties that may arise from the Master's Direction or from the Academic Committee.

In the second examination session, will be used the same evaluation criteria.

REFERENCES

Básicas

- Amelot, Michèle (2010) VBA Excel 2010. Programación en Excel: Macros y Lenguaje VBA; ediciónespañola, Claudio Sánchez. ENI Ediciones., Cornellá de LLobregat (Barcelona)

- Tung, H K K; Lai, D C F; Wong, M C S (2010). Professional financial computing using Excel and VBA [electronic resource]. Singapore ; Hoboken, NJ : Wiley.

https://ebookcentral.proquest.com/lib/univalencia/reader.action?docID=832453

- Walkenbach, J. (2013). Excel 2013 power programming with VBA [electronic resource]

https://ebookcentral.proquest.com/lib/univalencia/reader.action?docID=1144767

- Material elaborado por equipo docente del Departamento de Economía Financiera y Actuarial

Complementarias

- Allman, K.; Laurito, J. y Loh, M. (2011). Financial Simulation Modeling in Excel: a step-by-step guide. Jonh Wiley and Sons.

- Eksioglu, S.D., Seref, M. M., Ahuja, R. K., y Winston, W. L. (2011). Developing Spreadsheet-Based Decision Support Systems. Using Excel and VBA for Excel. Dynamic Ideas.

- Sengupta, C. (2010). Financial Modeling Using Excel and VBA. Jonh Wiley and Sons.

- Vergara Schmalbach, J.C. (2011). Desarrollo de aplicaciones en Microsoft Excel. EUMED-Universidad de Málaga.