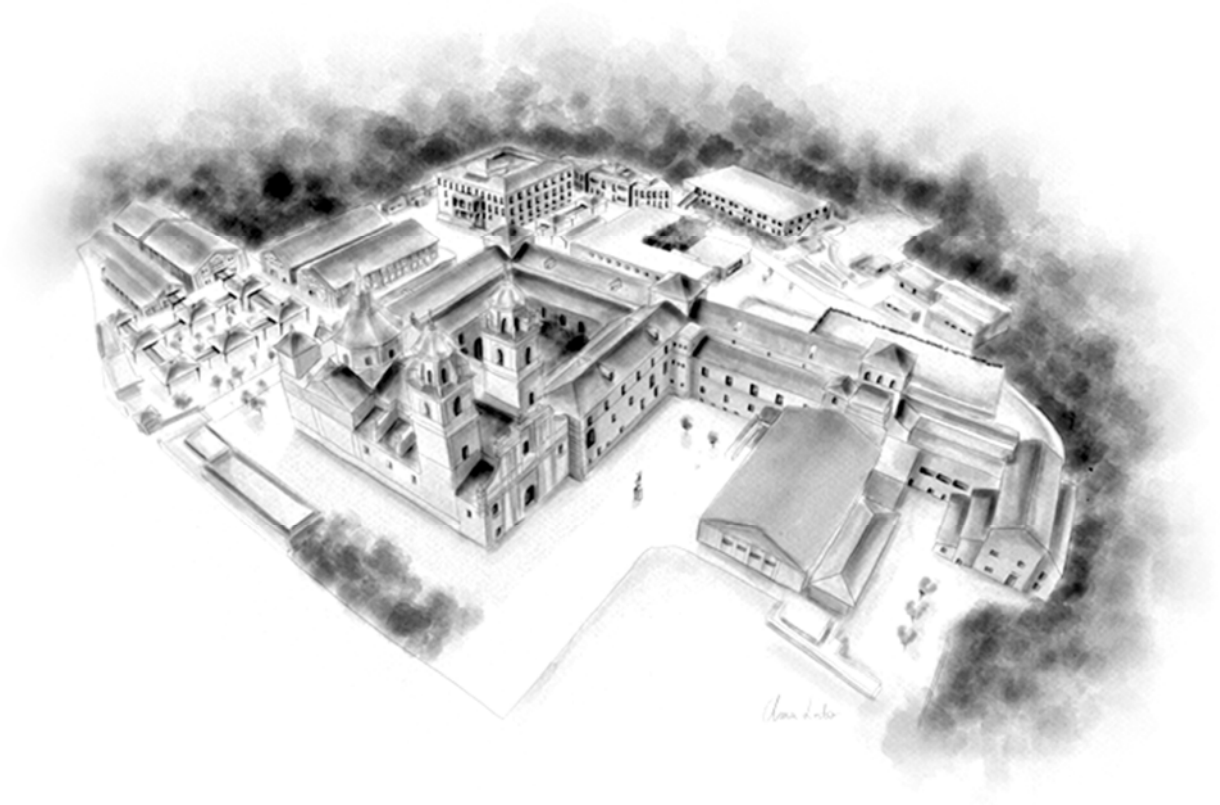
UCAM UNIVERSIDAD CATÓLICA DE MURCIA | 20 años de educación, amor y servicio

Teaching Guide 2017/2018

Financial Mathematics

Bachelor Business Administration

Face-to-face mode



Contents

Financial Mathematics

Module: **Financial Economics**.

Subject: **Financial Management**.

Character: **Compulsory**.

ECTS: **4,5 ECTS**.

Time period: **First Course, first semester**

Teacher: **Simona Popa**

Email: sppopa@ucam.edu

Student's attention timetable: **Fridays 11.00h-12.00h**

Module coordinator teacher: **Juan Cándido Gómez**

Brief Description

With knowledge of the different financial laws that exist and how they work, some capital may be substituted by others, thus formalizing different financial transactions. The course on Financial Mathematics deals with mathematics and financial laws of interests, rates and repayment of loans which, in many cases, are key for understanding the complex mechanisms of financial economy and financial management.

Previous requisites

Generally, the student should have previous knowledge from the Mathematics subject in Secondary Education, in the scientific-technical option or social sciences. This should be enough to get on with the subject.

Objetives

1. Know basic concepts of Financial Mathematics.
2. Analyze essential aspects of most relevant financial operations.
3. Interpret correctly the information obtained from the resolution of financial mathematics' problems.
4. Apply the knowledge acquired to the resolution of problems from the financial reality.

Competences and training results

Cross curricular subjects

(**T6)** Ability to manage information

(**T8**) Decision making

(T9) Team work

(T14) Critical reasoning

(**T16**) Autonomous learning

(**T24**) Ability to reflect

(UCAM1) Be able to express correctly in Spanish matters related to this professional field.

(UCAM2) Consider the principles of Christian humanism as essential values in the development of the professional practice.

(UCAM5) Have a good command of the basic ICT tools.

(UCAM6) Have the ability to work in teams, having a relationship with people from the same or different professional field.

(UCAM7) Develop abilities to start research.

Specific Competences

(E18) Know and apply basic Mathematical concepts in financial operations.

(E19) Acquire the ability to apply the knowledge to the practice.

(E39) Know and use accounting ledgers and the financing systems.

(E57) Communicate fluently within the work environment and work in team.

Learning results

- Apply properly the basic concepts and knowledge of the financial operations' Mathematics acquired.
- Solve problems about amortization/repayment</redemption and its methodology.
- Set out and solve different problems extracted from the financial reality.
- Know and manage freely concepts of simple and compound capitalization.
- Use the capital updating tools.
- Solve practice cases related to financial matters.
- Analyze and extract the information to elaborate financial reports.
- Solve problems and exercises in groups.
- Use a logical structure and write with orthographic correction.

- Use correct financial terminology in the tasks.
- Organize and know how to use the information from different contexts to organize work in Financial Management area.
- Decide in a comprehensive and critical way, among the different options when it comes to make decisions in the Financial Management area.
- Acquire and implement collaboration strategies and skills to favor team work in Financial Management area.
- Make assessments and take a critical position before the diversity of the different situations that may come across in the financial area.
- Manage in a proactive way the learning process in the scope of Financial Management area.
- Generate learning abilities to enable the student to follow subsequent training in the financial scope with high autonomy standards.
- Think in a critical and reasonable way questions related to the Financial Management area.

Methodology

Methodology	Hours	Hours of work Face-to-face	Hours of work Non Face-to-face
Lectures (60%)	27	45 hours (40%)	
Practice: workshop (13%)	5,85		
Practice teaching (15%)	10,12		
Tutorials (20%)	9		
Assessment (7%)	3,15		67, 5 hours (60%)
Personal study (45%)	30.38		
Tasks (30%)	20,25		
Bibliographic search (10%)	9		
TOTAL	**112,5**	**45**	**67,5**

Contents

UNIT 1: Capitalization Operations.

1.1. Introduction.
1.2. Simple Interest.
1.3. Compound Interest.
1.4. Applications.

UNIT 2: Discount Operations.

2.1. Concept and classification.
2.2. Simple discount. Simple commercial discount and simple rational discount.
2.3. Equivalent rates. Valuation date and equivalence on value.
2.4. Compound discount.
2.5. Applications.

UNIT 3: Annuities Valuation.

3.1. Concept and classification.
3.2. Simple, immediate and temporary annuities.
3.3. Simple, immediate and perpetual annuities.
3.4. Simple, deferred and temporary annuities.
3.5. Simple, deferred and perpetual annuities.
3.6. Anticipated temporary annuities.
3.7. Applications.

UNIT 4: General annuity.

4.1. General annuities with payments in arithmetical progression.
4.2. General annuities with payments in geometrical progression.
4.3. Applications.

UNIT 5: Fractional and continuous annuities.

5.1. Simple, fractional and temporary annuities.
5.2. Simple, fractional and perpetual annuities.
5.3. General fractional annuities.
5.4. Continuous annuities.
5.5. Applications.

UNIT 6: Loans.

6.1. Concept definition.
6.2. Amortization systems.
6.3. Effective rates of interest.
6.4. Applications.

Connection with other subjects of the study plan

There is a clear relationship with Accountancy module subjects, since they facilitate the adaptation and understanding process of the accounting entries.

There is also an important relationship with the subjects of Mathematics, since the basic content of the subject are mathematical-financial laws, although they have a more direct application to the economic world.

Likewise, it presents an important relationship with the subjects of business economy, financial analysis, practicum and degree final project.

Assessment system

February/June Call

- **Written exams: 80%**

There will be two exams with a series of theory-practice questions and the resolution of items about the problems studied. The first exam will be 40% of the total grade, and the second also 40%.

Student's involvement in the training activities: 20%

The student's involvement in the training activities that conform the subject will be assessed through the issuing and correction of the exercises, tasks, case studies and problems carried out individually and in groups; the public presentation of some of these tasks and the taking part on the debate forums.

The use of information sources will be taken into account, through a report-work, by following a formal draft. They will have to develop in depth a current topic, proposed by the teacher, associated to the knowledge acquired.

September Call:

The students will follow the same system of evolution as in the previous calls.

Ranking system

The ratings system (RD 1.125/2003. from 5th September) as follows:

0-4,9 Fail (SS)

5,0-6,9 Pass (AP)

7,0-8,9 Good (NT)

9,0-10 Distinction (SB)

The “Honors” mentions can be awarded to those students with a degree of 9,0 or higher. This cannot be awarded to more than 5% of the students registered in a subject in each academic year, unless the number of students registered is less than 20, when there will be awarded **only one mention**.

Bibliography and reference sources

Basic bibliography

- Campolieti, G. & Makarov, R. N. (2014). Financial mathematics: a comprehensive treatment. CRC Press. (Themes 1 to 6)
- Zima, P., Brown, R. & Kopp, S. (2010). Mathematics of Finance, 7th Edition, McGraw Hill Ryerson Higher Education (Themes 1 to 6)

Complementary bibliography

- Baquero, M. J. & Maestro, M. L. (2003). Problemas resueltos de matemática de las operaciones financieras. Edit. AC.
- Bonilla, M. &Ivars, A.(2006). Operaciones de financiación: enfoque teórico-práctico. Madrid: Edit. AC
- Bonilla, M., Ivars, A. & Moya, I. (2006). Matemáticas de las operaciones financieras. Edit. Thomson.
- Cabello, J.M. (1999). Matemáticas financieras aplicadas. Edit. AC. 1999
- Cruz, S. y Valls, M. C. (2008). Introducción a la Matemática Financiera. Madrid: Ediciones Pirámide.
- García, J. (2011). Matemáticas Financieras. Ed. PIRÁMIDE.
- Machín, Mª, (2009). Introducción a la Matemática Financiera. Madrid: Ed. CEF.
- Pallerola, J. (2008). Matemática financiera para el nuevo plan general de contabilidad. Ed. RA-MA.
- Santandreu, P.(2002). Matemática financiera: ejercicios resueltos. Ed. Gestión 2000.
- Tovar, J. (2011). Operaciones financieras. Teoría y problemas resueltos. Madrid: Ed. CEF.

Webs associated

- http://www.abanfin.com Asesores bancarios y financieros
- http://www.bde.es Banco de España
- www.ecb.euEuropean Central Bank
- www.lico.esLico Leasing

Study recommendations

We recommend to study every day the concepts explained putting special attention in the resolution of practical cases beforehand to the resolution in the class. Likewise, it is important to check for doubts and questions that suppose difficulties in the learning process. For that aim students can attend personal and scheduled tutorials, and make use of the virtual campus and e-mail. We also recommend the revision of the contents regularly.

Didactic material

It will be necessary to have a PC with all the necessary programs installed (text editor, spreadsheet, presentation tools, etc.) We also recommend students to use memory devices (USB, CDs or DVDs) to make easier the interchange of information in presentations such as Power Point, exercises, case study, etc., during the face-to-face classes. We also recommend the use of calculator and access to the Internet.

The basic material of work in the subject Financial Mathematics consists of a dossier prepared by the teacher and handed out to the students, together with exercises and items proposed by the teacher as support to the theoretical concepts.

Other sources:

- Reference books
- Articles from Economy magazines
- Economy Journals: Expansion, Cinco Dias, Mi cartera, etc.
- Audio-visual material. LCD projector.
- Blackboard and calculator.

Tutorials

Academic tutorial:

These tutorials have the aim of consolidating knowledge and abilities taught in the classes of the subject, at the same time will help to solve problems and doubts asked by the students. There will be an assessment and follow up of the different tasks in order to contribute to the understanding of the subject methodology and systems of assessment.

Personal Tutorial:

The university also has a Special Team that offer tutorials for the students enrolled in the degree. All students registered in UCAM have a personal tutor from the Special Tutors Team, when they register for the first time in the university; hence the student has this accompaniment during the complete university period. Criteria and aspects can be consulted in: http://www.ucam.edu/servicios/tutorias/preguntas-frecuentes/que-es-tutoria.