

**SYLLABUS**

<b>Course</b>	
Name	Finance and Cost Analysis
Code	DOI-IND-580
Degree	Máster Universitario en Ingeniería Industrial
Year	1
Semester	Fall or Spring
ECTS credits	6 ECTS
Character	Basic
Department	Industrial Engineering
Area	Economics and Business Administration
University	Comillas
Schedule	
Instructors	Sara Lumbreras, Mercedes Fernández, Cristóbal Cantos, Pablo Vicente Uceda, Guillermo Moya
Descriptor	

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### COURSE SPECIFICS

#### Context of the course

#### Contribution to the professional profile

This course introduces the student to the basic concepts of corporate finance, and some advanced elements of cost accounting, developing further those aspects more relevant to engineering. This course goes through the fundamentals of financial management and budgeting, bringing together skills and techniques previously learnt in the degree.

During the course, students will learn about the time value of money, how to interpret and analyse financial statements, to value investment projects, to compromise between risk and return, to produce budgets and to manage the firm's networking capital.

#### Pre-requisites

Previous knowledge of economic theory, financial accounting and cost accounting is required for attending this course.

### Competences – Goals

#### Generic competences

BA04. Being able to predict and control the evolution of complex situations through the development of new and innovative work methodologies adapted to the field of the specific scientist / researcher, technological or professional, in general multidisciplinary, in which his/her activity is developed.

BA05. Knowing how to transmit clearly or unambiguously to a specialized audience or not, results from scientific and technological research or from the field of innovation and its fundamentals.

CG06. Manage technical and economic projects , installations, facilities , and technology centers .

CG10. Knowing how to communicate, clearly and unambiguously, conclusions and findings -and the knowledge and rationale underpinning these- to specialist and non-specialist audiences.

CG12. Knowledge, understanding and ability to apply the necessary legislation in the exercise of the profession of Industrial Engineer

### Specific Competences and Learning Results<sup>1</sup>

**CMG1. Knowledge and ability to organise and manage business.**

**CMG3. Knowledge of Business and Labor Law**

**CMG4. Knowledge of financial and cost accounting**

**CMG5. Knowledge of management systems, industrial organization, production systems, logistics and quality management systems.**

RA1. To know the concepts of financial accounting and its relation with commercial law

RA2. Analyse the economic and financial information of a company and make decisions

RA3. Understand the different costing systems and their application to decision making

RA4. Learn the basic tools for the financial analysis of the company

RA5. Evaluate and select investing and financing decisions

RA6. Present and justify, both orally and in writing, economic and financial results of a firm, or investment decisions.

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<sup>1</sup> Learning results are observable indicators of the competences acquired, which allow assessing the degree of competence of the students.



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## CONTENTS AND MODULES

### Contents

#### MODULE 1: Basic concepts

##### 1 OVERVIEW

- 1 The firm and its legal framework
- 2 Sources of finance
- 3 Business finance and the financial manager
- 4 The goal of financial management

##### 2 THE TIME VALUE OF MONEY

- 1 Interest and future value
- 2 Present value
- 3 Effective annual interest rates
- 4 Inflation and the time value of money

#### MODULE 2: Financial statements and ratios

##### 3 FINANCIAL STATEMENTS

- 1 Balance sheet,
- 2 Income statement
- 3 Statement of cash flows & free cash flow
- 4 Statement of retained earnings

##### 4 RATIOS

- 1 Liquidity
- 2 asset management
- 3 debt management
- 4 profitability
- 5 market value
- 6 Dupont analysis

#### MODULE 3: Project cash flows

##### 5 PROJECT CASH FLOWS

- 1 Pro forma financial statements.
- 2 Incremental cash flows.
- 3 Net working capital.
- 4 Depreciation, book value versus market value

##### 6 CAPITAL BUDGETING TECHNIQUES

- 1 Net present value
- 2 Internal Rate of Return and Modified Internal Rate of Return
- 3 Profitability Index

##### 7 EVALUATING PROJECTS UNDER RISK

- 1 Decision trees
- 2 Break even analysis and operating leverage
- 3 Sensitivity analysis and scenario analysis
- 4 Real options

#### MODULE 4: Risk and return

##### 8 VALUATION OF STOCK AND BONDS

- 1 Valuing bonds: Bond market, Bond valuation, Bond yields
- 2 Valuing stock: Stock markets, Stock valuation methods

##### 9 RISK AND RETURN

- 1 Returns, Certainty and Uncertainty: Capital Asset Pricing Model
- 2 Risk, cost of capital and capital budgeting
- 3 Cost of capital: The WACC
- 4 Elements of portfolio management



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## TEACHING METHODOLOGY

### General methodological aspects

In order to achieve the learning objectives stated above, the course will focus on the students' activity and on their active learning. Therefore, the methodology will be oriented towards a more active role of the student.

### Classroom methodology: Activities

1. Lectures: the instructor will start from a case or a problem related to the course objectives. These cases will have previously been given to and read by the students. Then the situation will be discussed, and the concepts and tools required to address it will be introduced and explained. This will help students to identify the basic elements of financial and cost analysis, and to face related problems.
2. Problem solving/Case discussion: In these sessions, tasks previously given to students (problems and case studies) will be discussed, solved and explained. In order to participate in these sessions the student must hand in previously the task

### Non-classroom methodology: Activities

The objective of non-classroom activities is to understand the concepts and methodologies described in class, and to apply them to the different problems or case studies presented in the classroom or given by the instructor.

1. Individual and group study of the concepts, methodologies and techniques learnt during the lectures
2. Problem solving
3. Case analysis and preparation (in groups).

In addition, instructors will address the questions of students individually or in groups during their office hours, and will also help them orient their learning process

SUMMARY OF THE STUDENT WORKING HOURS	
CLASSROOM ACTIVITIES	
Lectures	Problem/case solving
20	40
NON-CLASSROOM ACTIVITIES	
Autonomous work – theory	Autonomous work – problems
40	70
CRÉDITOS ECTS: 6 (180 hours)	



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### EVALUATION AND GRADING CRITERIA

Evaluation activities	Grading criteria	Weight
<ul style="list-style-type: none"><li>• Test 1 *</li><li>• Final exam*</li></ul> <p>*a two sided A4 size cheat sheet is allowed</p>	<ul style="list-style-type: none"><li>- Understanding of concepts.</li><li>- Application of concepts to problem solving.</li><li>- Analysis and interpretation of problem results.</li><li>- Quality of writing and overall presentation.</li></ul>	65% (25% midterm, 40% final exam)
The minimum grade to pass the final exam (and subsequently pass the course) is 3 out of 10.		
Problems and case studies given for out-of-classroom work	- Handing them in <b>before</b> the corresponding session	25%
Active participation	- Class attendance and participation	10%

### Grading

The final grade of the course will result from adding the following elements:

- **65%** from the grade in the mid-season test and final exam. The mid-season test grade will represent 25% and the final exam will represent 40% of the overall grade.
- **25%** from handing in the problems and/or cases given for out-of-classroom work. **Homework should be handed in prior to the beginning of the lecture. Late homework will not be graded.**  
  
50% of each hand-in will be assessed for Content (whether something was written and to what degree), Expression (how something was written, how well it was written), and Formatting (number of words, presentation, etc). Class discussion of the cases represents the remaining 50%.
- **10%** from the grade corresponding to attendance to and participation in class.

#### Extraordinary session

The same criteria are valid, except that the 65% of the grade, previously obtained from both, midterm and final exams, will correspond solely to the final exam.



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## WORK PLAN AND SCHEDULE<sup>2</sup>

The specific schedule for each session of the course, in addition to all materials, will be available for the students at the start of the course.

Session	Lesson	Contents	Activity	Hand in	Reference
1	0+1	Presentation+ Overview	T		Study guide+ Ross 1, Crundwell, 16
2	1	Introduction to Commercial Law	T		Cornett 4+5, Ross 4
3	2	The time value of money	T+P		Cornett 4+5, Ross 4
4	2	The time value of money	T+P		Cornett 4+5, Ross 5
5	2	The time value of money	T+P		Cornett 2+ 3, Ross 2+3
6	3	Financial statements	T		Cornett 2+ 3, Ross 2+3
7	3	Financial statements	T		Cornett 2+ 3, Ross 2+3
8	3	Financial statements	T+P		Cornett 2+ 3, Ross 2+3
9	3	Financial statements	T+P		Cornett 2+ 3, Ross 2+3
10	3	Ratios	T		Cornett 2+ 3, Ross 2+3
11	3	Ratios	T+P		Cornett 2+ 3, Ross 2+3
12	3	Ratios	T+P		Cornett 2+ 3, Ross 2+3
13	4	Ratios	T+P		Cornett 2+ 3, Ross 2+3
14	3+4	FACA CHALLENGE	Prez 1		
15	3+5	FACA CHALLENGE	Prez 2		
16	3+6	FACA CHALLENGE	Prez 3		
17	3+7	FACA CHALLENGE	Prez 4		
18	3+8	FACA CHALLENGE	Prez 5		
19	3+9	FACA CHALLENGE	Prez 6		
20	3+4	FS+R (review, Q&A)	Q&A		
21	3+4	FS+R (review, Q&A)	Q&A		
22	5	Project cash flows	T		Cornett 12+13, Ross7+8+9
23	5	Project cash flows	T		Cornett 12+13, Ross7+8+9
24	5	Project cash flows	T+P		Cornett 12+13, Ross7+8+9
25	5	Project cash flows	T+P		Cornett 12+13, Ross7+8+9
26	5	Capital Budgeting Techniques	T+P		Cornett 12+13, Ross7+8+9
27	5	Capital Budgeting Techniques	T+P		Cornett 12+13, Ross7+8+9
28	5	Capital Budgeting Techniques	P		Cornett 12+13, Ross7+8+9
29	7	Evaluating projects under risk	T+P		Cornett 12+13, Ross7+8+9
30	7	Evaluating projects under risk	P		Cornett 12+13, Ross7+8+9
31	5+6+7	PCF&CBT&PUR (Review)	Q&A		Cornett 12+13, Ross7+8+9
32	5+6+7	PCF&CBT&PUR (Review)	Q&A		Cornett 12+13, Ross7+8+9
33	8	Bond valuation	T+P		Cornett 7, Ross 5
34	8	Bond valuation	P		Cornett 7, Ross 5
35	8	Bond valuation	P		Cornett 7, Ross 5
36	8	Stock valuation	T+P		Cornett 8, Ross 6
37	8	Stock valuation	P		Cornett 8, Ross 6
38	9	Stock valuation	P		Cornett 8, Ross 6
39	9	Risk and return-CAPM	T+P		Cornett 9+10, Ross 10+11
40	9	Risk and return-CAPM	T+P		Cornett 9+10, Ross 10+11
41	9	Risk and Return WACC	T+P		Cornett 9+10, Ross 11+12
42	9	Risk and Return WACC	T+P		Cornett 9+10, Ross 11+12
43	5+6+7+8+9	FACA CHALLENGE	Prez 2		
44	5+6+7+8+9	FACA CHALLENGE	Prez 2		
45	5+6+7+8+9	FACA CHALLENGE	Prez 2		
46	5+6+7+8+9	FACA CHALLENGE	Prez 2		
47	5+6+7+8+9	FACA CHALLENGE	Prez 2		
48	5+6+7+8+9	FACA CHALLENGE	Prez 2		
49		Total review	Q&A		All
50		Total review	Q&A		All
51		Total review	Q&A		All
52		Total review	Q&A		All
53		Total review	Q&A		All
54		Total review	Q&A		All
55		Total review	Q&A		All
56		Total review	Q&A		All

Depending on the specific lesson, the activities will include:

- Case study preparation (out-of class group-work is required) and discussion (to be done in class).
- Case hand-ins on due date.

<sup>2</sup> A detailed planning of the course may be found in the schedule. This planning is indicative and may change along the course.



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- Lectures.
- Problem solving. Some of the problems will be solved in class, while the rest will be proposed as voluntary homework. The answers to the problems will be available for the students since the beginning of the course.
- Short quizzes might be performed at any point during the course, not necessarily warned in advance. They can consist of short multiple choice questions or short problems. They will be taken into account for the "active participation" grade.
- Interim exam that covers from Lesson 1 (Overview) to Lesson 7 (Evaluating projects under risk) and will be performed on week10.

### REFERENCES AND RESOURCES

#### Basic references

Ross, S. Westerfield, R. Jafe, J. and Jordan, B. (2017) *Corporate Finance. Core principles and applications* (Fifth Edition). McGrawHill.

#### Complementary references

Brealey, R., Myers, S. and Marcus, A. (2012) *Fundamentals of Corporate Finance*, 7th Edition. McGrawHill.

Cornett, M. Adair, T. and Nofsinger, J. (2014) *Finance*, 2nd Edition, McGrawHill.

Crundwell, F.K. (2008). *Finance for Engineers. Evaluation and Funding of Capital Projects*. Springer.

Higgins, R.C. (2011) *Analysis for Financial Management*, 10th Edition. McGrawHill.

Ross, S. Westerfield, R. and Jordan, B. (2014) *Essentials of Corporate Finance*, 8th Edition. McGrawHill.

Valdez, S. and Molyneux, P. (2010) *An Introduction to Global Financial Markets*, Palgrave MacMillan.