ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000547 - Software engineering economics

DEGREE PROGRAMME

10AM - Master Universitario En Ingenieria Del Software

ACADEMIC YEAR & SEMESTER

2018/19 - Semester 1

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	103000547 - Software engineering economics
No of credits	6 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AM - Master universitario en ingenieria del software
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2018-19

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
June Amillo Gil (Subject coordinator)	1317	june.amillo@upm.es	M - 16:00 - 17:00 or By appointment

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Skills and learning outcomes *

3.1. Skills to be learned

CG5 - Organización y planificación

3.2. Learning outcomes

RA58 - Development of a business case for a software project

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

The goal of this course is twofold. Firstly, it introduces the basic concepts and techniques used in financial analysis to assess the economic value of a project. Secondly, it provides with the needed tools to make informed financial decisions on engineering projects. The course has a practical orientation and it is based on a collection of case studies drawn from real-world engineering situations with particular emphasis on those applications found in software engineering practice..

4.2. Syllabus

1. The Time Value of Money
    1.1. Compounding and discounting
    1.2. Nominal and effective interest rates
    1.3. Composite cash flows
    1.4. Bond and stock valuation
2. Value based decision making
    2.1. Project analysis and figures of merit
    2.2. Net present value
    2.3. Mutually exclusive alternatives
    2.4. Equivalent annual value
    2.5. IRR and incremental analysis
    2.6. ROI and Benefit/Cost analysis
3. Generating a project cash flow
    3.1. What to discount
    3.2. Equity cash flow
    3.3. Cash flows and inflation
    3.4. Effects of Depreciation and Taxes
    3.5. Free cash flow and the cost of capital
    3.6. Review case study
4. Project Financing
    4.1. Equity Financing
    4.2. Debt and Equity Financing
    4.3. Adjusted Present Value
    4.4. The CAP Model and The Cost of Equity
    4.5. Estimating the Cost of Equity
    4.6. The Cost of Capital
5. Assessing Project Risk

5. Schedule

5.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1	**Chapter 1** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
2	**Chapter 1** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
3	**Chapter 1** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
4	**Chapter 2** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		**Assessment** Problem-solving test Continuous assessment and final examination Duration: 02:00
5	**Chapter 2** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
6	**Chapter 2** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
7	**Chapter 2** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
8	**Chapter 3** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		**Assessment** Problem-solving test Continuous assessment and final examination Duration: 02:00
9	**Chapter 3** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
10	**Chapter 3** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
11	**Chapter 4** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
12	**Chapter 4** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		**Assessment** Problem-solving test Continuous assessment and final examination Duration: 02:00

13	**Chapter 4** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
14	**Chapter 5** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
15	**Chapter 5** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		
16	**Chapter 6** Duration: 02:00 Lecture	**Case study** Duration: 02:00 Laboratory assignments		**Assessment** Problem-solving test Continuous assessment and final examination Duration: 02:00
17				

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The subject schedule is based on a previous theorical planning of the subject plan and might go to through experience some unexpected changes along throughout the academic year.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
4	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
8	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
12	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
16	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5

6.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
4	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
8	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
12	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5
16	Assessment	Problem-solving test	Face-to-face	02:00	25%	0 / 10	CG5

6.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

6.2. Assessment criteria

First assessment 25%second assessment 25%Final assessment 50%

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Tockey, Steve. Return on Software. Addison-Wesley, 2005.	Bibliography	