UNIVERSIDAD POLITÉCNICA DE MADRID
FACULTAD DE INFORMÁTICA
Campus de Montegancedo
Boadilla del Monte. 28660 Madrid

Software Engineering Economics

Learning Guide – Information for Students

1. Description

Degree	Master Universitario en Ingeniería Informática
Module	Dirección y Gestión
Subject	Software Engineering Economics
Type	Required
ECTS credits	3
Department	Applied Mathematics
Academic year	2013/2014
Term	1st term
Language	English
Web site	http://www.dma.fi.upm.es/docencia/postgrado/economiadelaingenieria/homeSEEMUII.html

2. Faculty

NAME and SURNAME	OFFICE	email
June Amillo	1317	amillo@fi.upm.es

3. Prior knowledge required to take the subject

Prerequisites	• None
Other required learning outcomes	• None

4.Learning goals

SUBJECT-SPECIFIC COMPETENCIES AND PROFICIENCY LEVEL		
Code	**Competency**	**Level**
SC13	Have a vision of the different specific and emergent aspects of the Software Engineering, and to go into depth in some of them.	S
SC14	Understand what nowadays software engineering procedures can and cannot reach, their limitations and their possible future evolution.	S

Proficiency level: knowledge (K), comprehension (C), application (A), and analysis and synthesis (S)

SUBJECT LEARNING OUTCOMES			
Code	**Learning outcome**	**Related competencies**	**Proficiency level**
LR1	Given a specific software engineering field, the student assesses and designs the most appropriate solution to solve some of its problems, presenting the technical difficulties and applicability limitations.	SC13,SC14	S
LR2	Given a real problem, the student chooses the most appropriate software engineering solution, analyzing the solution feasibility, what can and cannot be achieved through the current status of the chosen solution, and what it can advance in the future.	SC13,SC14	S
LR3	The student explains what are the software engineering limits and frontiers, and the base for new trends and developments, and about the advanced issues and their application.	SC13,SC14	S

5. Subject assessment system

ACHIEVEMENT INDICATORS		
Ref	**Indicator**	**Related to LR**
I1	Generate a project cash flow and compute its economic value in real like situations.	LR2
I2	Make value-based economic decisions about project acceptance and selection.	LR2
I3	Generate the project's cash flow.	LR2

CONTINUOUS ASSESSMENT			
Brief description of assessable activities	**Time**	**Place**	**Weight in grade**
Case study assignments	Weeks 1-7	In class	70%
Final review case study	Last day	In class	10%
Homework project assignment	Weeks 4-8	Home	20%
			Total: 100%

GRADING CRITERIA
Regular participation in class activities is required. Students will be allowed to miss at most 10% of the classes without penalty. Participation will be assessed by the degree of completion of the daily case studies. A final review case will be assigned the last day of class to be worked out individually. A homework project will be assigned at week 3 to be handed in by the end of the course.

6. Contents and learning activities

SPECIFIC CONTENTS		
Unit / Topic / Chapter	**Section**	**Related indicators**
Chapter 1: The Time Value of Money	1.1 Compounding and discounting	I1
	1.2 Nominal and effective interest rates	I1
	1.3 Composite cash flows	I1
	1.4 Bond and stock valuation	I1
Chapter 2: Value Based Decision Making	2.1 Project Analysis and figures of merit	I2
	2.2 Net Present Value	I2
	2.3 Mutually exclusive alternatives	I2
	2.4 Break-even Analysis	I2
	2.5 IRR and Incremental Analysis	I2
	2.6 ROI and other Benefit/Cost ratios	I2
Chapter 3: Generating a Project Cash Flow	3.1 Equity cash flow	I3
	3.2 Cash flows and inflation	I3
	3.3 Effect of Depreciation and Taxes	I3
	3.4 Free Cash Flow and the cost of capital	I3
	3.5 Review case study	I1,I2,I3

7. Brief description of organizational modalities and teaching methods

BRIEF DESCRIPTION OF THE ORGANIZATIONAL MODALITIES AND TEACHING METHODS	
PRACTICAL WORK	Classes will have a practical orientation and will be conducted in a computer lab.
THEORY CLASSES	Part of everyday class will be devoted to lecture.
CASE STUDIES	Part of everyday class will be devoted to work out one or more case studies.
GROUP WORK	In-class case studies can be worked out in groups of at most two students.
INDIVIDUAL WORK	Students will be required to carry additional individual work and study outside of the class.

8. Teaching resources

TEACHING RESOURCES	
RECOMMENDED READING	Tockey, Steve. *Return on Software.* Addison-Wesley, 2005.
	Reifer, Donald J. *Making the Softwre Business Case.* Addison-Wesley, 2002.
WEB RESOURCES	Subject web site http://www.dma.fi.upm.es/docencia/postgrado/economiadelaingenieria/homeSEEMUII.html
EQUIPMENT	Room TBA

9. Subject schedule

Week	Classroom activities	Individual work	Assessment activities
Week 1,2 (10 hours)	• (3.0 hours) Chapter 1 (1.5 hours) Case Study	• (5.5 hours) Reading assignments	•
Week 3,4 (10 hours)	• (3.0 hours) Chapter 1 (1.5 hours) Case Study	• (5.5 hours) Reading assignments	•
Week 5,6 (10 hours)	• (3.0 hours) Chapter 2 (1.5 hours) Case Study	• (3.5 hours) Reading assignments and (2 hours) Homework Project	•
Week 7,8 (10 hours)	• (3.0 hours) Chapter 2 (1.5 hours) Case Study	• (3.5 hours) Reading assignments and (2 hours) Homework Project	•
Week 9,10 (10 hours)	• (3.0 hours) Chapter 2 (1.5 hours) Case Study	• (3.5 hours) Reading assignments and (2 hours) Homework Project	•
Week 11,12 (10 hours)	• (3.0 hours) Chapter 3 (1.5 hours) Case Study	• (3.5 hours) Reading assignments and (2 hours) Homework Project	•
Week 13,14 (10 hours)	• (3.0 hours) Chapter 3 (1.5 hours) Case Study	• (3.5 hours) Reading assignments and (2 hours) Homework Project	•
Week 15 (5 hours)	•	• (3.0 hours) Homework Project	• (2 hours) Chapters 1,2 & 3 Project deadline

Note: Student workload specified for each activity in hours