



# Software Project Management

## Learning Guide – Information for Students

### 1. Description

<b>Grade</b>	Master Universitario en Ingeniería del Software – <u>European Master on Software Engineering</u>
<b>Module</b>	Project Management and Organizational Processes
<b>Area</b>	
<b>Subject</b>	Software Project Management
<b>Type</b>	Mandatory
<b>ECTS credits</b>	4
<b>Responsible department</b>	Lenguajes, Sistemas Informáticos en Ingeniería del Software
<b>Major/Section/</b>	

<b>Academic year</b>	2012/2013
<b>Term</b>	1st
<b>Language</b>	English
<b>Web site</b>	



## 2. Faculty

<b>NAME and SURNAME</b>	<b>OFFICE</b>	<b>email</b>
Ana M Moreno (Coord.)	5101	ammoreno@fi.upm.es

## 3. Prior knowledge required to take the subject

<b>Passed subjects</b>	<ul style="list-style-type: none"><li>•</li></ul>
<b>Other required learning outcomes</b>	<ul style="list-style-type: none"><li>•</li></ul>



## 4. Learning goals

<b>SUBJECT-SPECIFIC COMPETENCES AND PROFICIENCY LEVEL</b>		
<b>Code</b>	<b>Competence</b>	<b>Level</b>
SC1	To perform a project plan to coordinate and prioritize resources and activities, in order to obtain the expected results within the deadlines, costs and quality required.	S
SC2	To carry out a software project monitoring and to make corrective decisions whenever is needed.	S
SC3	To perform an estimation of a software project parameters.	S

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



<b>SUBJECT LEARNING OUTCOMES</b>			
<b>Code</b>	<b>Learning outcome</b>	<b>Related competences</b>	<b>Proficiency level</b>
LR1	Application of main cost/effort estimation techniques and domains of application	SC3	A
LR2	Development of a project plan using as input estimation data	SC1	A
LR3	Re-plannification of a software project with monitoring information	SC2	A
...			



## 5. Subject assessment system

ACHIEVEMENT INDICATORS		
Ref	Indicator	Related to LR
I1	Application of main estimation methods in a medium software project	LR1
I2	Development of a project plan using as input results of estimation	LR2
I3	Adjustment of project plans with real data	LR3
...		

(Optionally, use rubric table instead)

CONTINUOUS ASSESSMENT			
Brief description of assessable activities	Time	Place	Weight in grade
Participation of the student during classes	All the course	During classes	20%
Content of reports with homeworks (two reports)	Report 1: week 10	At home	30% Report 1
	Report 2: Weeks 13 to 15		30% Report 2
Public presentation of homeworks	Week 16	During classes	20%
			<b>Total: 100%</b>



## GRADING CRITERIA

The final grade of students will be calculated according to their performance in the two reports to be done and their class participation.

- Active participation of students (10%)
- Content of two reports (60%, 30% each)
- Presentation of the two reports (20%, 10% each)

Students must get a minimum of 5 points (over 10) in the assessment of each of the two reports in order to pass the matter.

Students must get a minimum of 5 points (over 10) as final grade in order to pass the matter.



**POLITÉCNICA**



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



## 6. Contents and learning activities

SPECIFIC CONTENTS		
Unit / Topic / Chapter	Section	Related indicators
<b>Chapter 1: Introduction to Software Project Estimation</b>	1.1 Definition	I1
	1.2 Requirements of a Good Estimator	I1
	1.3 Requirements of a Good Estimator Method	I1
	1.4 Outputs of the Estimation Process (metrics)	I1
<b>Chapter 2: Software Estimation Methods</b>	2.1 Expert Based Estimation	I1
	2.2 Analogy Based Estimation	I1
	2.3 Model Based Estimation	I1
<b>Chapter 3: Function Points Metric</b>	3.1. IFPUG Standard	I1
	3.2. IFPUG vs MKII, COSMIC	I1
<b>Chapter 4: COCOMO II</b>	4.1. Technique Description	I1
	4.2 Tools	I1
<b>Chapter 5: Project Planning</b>	5.1. Planning Techniques	I2
	5.2. Monitoring Techniques	I2
	5.3. Planning and Monitoring Tools	I2, I3
	5.4. Relationship Estimation - Planning	I2, I3
<b>Chapter 6: Domain Specific Estimation Methods</b>	6.1. Web Based Estimation	I1
	6.2. Object Oriented Estimation	I1
	6.3. Real Time Estimation	I1
	6.4. Agile Estimation	I1





## 7. Brief description of organizational modalities and teaching methods

<b>TEACHING ORGANIZATION</b>		
<b>Scenario</b>	<b>Organizational Modality</b>	<b>Purpose</b>
X	Theory Classes	<i>Talk to students</i>
X	Seminars/Workshops	<i>Construct knowledge through student interaction and activity</i>
X	Practical Classes	<i>Show students what to do</i>
	Placements	<i>Round out student training in a professional setting</i>
	Personal Tutoring	<i>Give students personalized attention</i>
X	Group Work	<i>Get students to learn from each other</i>
	Independent Work	<i>Develop self-learning ability</i>



<b>TEACHING METHODS</b>		
	<b>Method</b>	<b>Purpose</b>
X	<b>Explanation/Lecture</b>	<b><i>Transfer information and activate student cognitive processes</i></b>
X	<b>Case Studies</b>	<b><i>Learning by analyzing real or simulated case studies</i></b>
	<b>Exercises and Problem Solving</b>	<b><i>Exercise, test and practice prior knowledge</i></b>
	<b>Problem-Based Learning (PBL)</b>	<b><i>Develop active learning through problem solving</i></b>
	<b>Project-Oriented Learning (POL)</b>	<b><i>Complete a problem-solving project applying acquired skills and knowledge</i></b>
X	<b>Cooperative Learning</b>	<b><i>Develop active and meaningful learning through cooperation</i></b>
	<b>Learning Contract</b>	<b><i>Develop independent learning</i></b>

Known as explanation, this teaching method involves the “*presentation of a logically structured topic with the aim of providing information organized according to criteria suited for the purpose*”. This methodology, also known as *lecture*, mainly focuses on the verbal exposition by the teacher of contents on the subject under study. The term *master class* is often used to refer to a special type of lecture taught by a professor on special occasions

Intensive and exhaustive analysis of a real fact, problem or event for the purpose of understanding, interpreting or solving the problem, generating hypotheses, comparing data, thinking, learning or diagnosis and, sometimes, training in possible alternative problem-solving procedures.

Situations where students are asked to develop the suitable or correct solutions by exercising routines, applying formulae or running algorithms, applying information processing procedures and interpreting the results. It is often used to supplement lectures.

Teaching and learning method whose starting point is a problem, designed by the teacher, that the student has to solve to develop a number of previously defined competences.

Teaching and learning method where have a set time to develop a project to solve a problem or perform a task by planning, designing and completing a series of activities. The whole thing is based on developing and applying what they have learned and making effective use of resources.

Interactive approach to the organization of classroom work where students are responsible for their own and their peers’ learning as part of a co-responsibility strategy for achieving group goals and incentives.

This is both one of a number of methods for use and an overall teaching approach, or philosophy.

An agreement between the teacher and student on the achievement of learning outcomes through an independent work proposal, supervised by the teacher, and to be accomplished within a set period. The essential points of a learning contract are that it is a written agreement, stating required work and reward, requiring personal involvement and having a time frame for accomplishment.



**BRIEF DESCRIPTION OF THE ORGANIZATIONAL MODALITIES AND TEACHING METHODS**

<b>THEORY CLASSES</b>	The teacher will present the basic concepts of the Project Management techniques addressed along with small exercises
<b>PROBLEM-SOLVING CLASSES</b>	The teacher will present an estimation problem to be solved by students. He will provide the main guidelines for solving it and students will end the process
<b>PRACTICAL WORK</b>	...
<b>INDIVIDUAL WORK</b>	...
<b>GROUP WORK</b>	Students will work in groups of 3-4 students solving a particular estimation and planning problem. They will also prepare a report with the results of the work
<b>PERSONAL TUTORING</b>	The teacher will be available for solving any question students may have either individually or in group



## 8. Teaching resources

<b>TEACHING RESOURCES</b>	
<b>RECOMMENDED READING</b>	<p>Software Cost Estimation with Cocomo II</p> <p>Barry W. Boehm, Chris Abts, A. Winsor Brown, Sunita Chulani, Bradford K. Clark, Ellis Horowitz, Ray Madachy, Donald J. Reifer, Bert Steece            Publisher: Prentice Hall PTR (August 11, 2000)            ISBN-10: 0130266922</p>
	<p>Function Point Analysis: Measurement Practices for Successful Software Projects (Addison-Wesley Information Technology Series)</p> <p>by David Garmus, David Garmus, David Herron            Publisher: Addison-Wesley Professional (December 15, 2000)            ISBN-10: 0201699443</p>
	<p>Updating weight values for function point counting</p> <p>Xia W., Ho D., Capretz L., Ahmed F.            International Journal of Hybrid Intelligent Systems 6(1): 1-14, 2009</p>
	<p>Software Estimation: Demystifying the Black Art</p> <p>Steve McConnell            Publisher: Microsoft Press            Pub. Date: March 2006            ISBN-13: 9780735605350</p>
<b>WEB RESOURCES</b>	<p>Getting results from software development teams</p> <p>Peters, Lawrence. Microsoft Press. 2008            ISBN: 978-0-7356-2346-0</p>
	<p>Subject web site (<a href="http://http://www.grise.upm.es/docencia/estimacion/">http:// http://www.grise.upm.es/docencia/estimacion/</a>)</p>
<b>EQUIPMENT</b>	<p>Subject Moodle site (<a href="http://">http://</a>)</p>
	<p>Group work room</p>
	<p>Laboratory 1004</p>
	<p>Room 6106</p>



## 9. Subject schedule

Week	Classroom activities	Lab activities	Individual work	Group work	Assessment activities	Others
4Week 1 ( hours)	Chapter 1: 2		Individual study: 2			
Week 2 (6 hours)	Chapter 2: 2		Individual study: 2	Group work: 2		.
Week 3 (6 hours)	Chapter 3: 2		Individual study: 2	Group work: 2		.
Week 4 (6 hours)	Chapter 3: 2		Individual study: 2	Group work: 2		.
Week 5 (4 hours)	Chapter 3: 2			Group work: 2		.
Week 6 (6 hours)		Chapter 4: 2	Individual study: 2	Group work: 2		.
Week 7: (6 hours)		Chapter 4: 2	Individual study: 2	Group work: 2		.
Week 8 (2 hours)		Chapter 5: 2	Individual study: 2			
Week 9		Chapter 5:	Individual study:	Group work:	Work presentation	



(11 hours)		2	4	4	1	
Week 10 (10 hours)	Chapter 6: 2		Individual study: 4	Group work: 4		
Week 11 (10 hours)	Chapter 6: 2		Individual study: 4	Group work: 4		
Week 12 (10 hours)	Chapter 6: 2		Individual study: 4	Group work: 4		
Week 13 (4 hours)	Chapter 6: 2		Individual study: 2	Group work: 2		
Week 14 (4 hours)	Chapter 6: 2		Individual study: 2	Group work: 2		
Week 15 (4 hours)	Chapter 6: 2			Group work: 2		
Week 16 (5 hours)	Chapter 6: 2			Group work: 2	Work presentation 1	

Note: Student workload specified for each activity in hours