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

Non-classic software methodologies: Project management and development strategies

Learning Guide – Information for Students

1. Description

Grade	Master Universitario en Ingeniería del Software – European Master on Software Engineering
Module	Advanced Software Engineering Aspects
Area	
Subject	Non-classic software methodologies: Project management and development strategies
Type	Optative
ECTS credits	4
Responsible department	Lenguajes, SisTopics Informáticos e Ingeniería del Software
Major/Section/	

Academic year	2012/2013
Term	1st term
Language	English
Web site	

2. Faculty

NAME and SURNAME	OFFICE	email
Ana M Moreno (Coord.)	5102	ammoreno@fi.upm.es

3. Prior knowledge required to take the subject

Passed subjects	•
Other required learning outcomes	•

4. Learning goals

SUBJECT-SPECIFIC COMPETENCES AND PROFICIENCY LEVEL		
Code	**Competence**	**Level**
SC13	To have a vision of the different specific and emergent aspects of the Software Engineering, and to go further in some of them.	S
SC14	To 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 competences**	**Proficiency level**
LR1	**Identification of lacks in project estimation and planning in non classical methodologies**	SC13, SC14	C
LR2	**Identification of research results aimed at solving project estimation and planning lacks in non classical methodologies**	SC13, SC14	C
LR3	**Identification of lacks in analysis and design activities in non classical methodologies**	SC13, SC14	C
LR4	**Identification of research results aimed at solving analysis and design lacks in non classical methodologies**	SC13, SC14	C

5. Subject assessment system

ACHIEVEMENT INDICATORS		
Ref	**Indicator**	**Related to LR**
I1	Knowledge about most common non classical methodologies	LR1 LR 3
I2	Apply most common non classical methodologies to solve small-medium problems	LR1 LR 3
I3	Analyse and identify limitations about project management and development in non classical methodologies	LR1 LR3
I4	Knowledge about novel estimation and planning strategies in non classical methodologies	LR2
I5	Application of novel estimation and planning strategies in non classical methodologies to small-medium problems	LR 2
I6	Analyse and identify limitations about development strategies in non classical methodologies	LR 1
I7	Knowledge about pioneers development strategies in non classical methodologies	LR 4
I8	Application of pioneers development strategies in non classical methodologies to small-medium problems	LR 4

(Optionally, use rubric table instead)

CONTINUOUS ASSESSMENT			
Brief description of assessable activities	**Time**	**Place**	**Weight in grade**
Participation of students during classes	All the course	During classes	20%

CONTINUOUS ASSESSMENT			
Brief description of assessable activities	**Time**	**Place**	**Weight in grade**
Content of reports with homeworks (two reports)	Report 1: week 5 Report 2: Week 8	At home	30% Report 1 30% Report 2
Public presentation of homeworks (two reports)	Report 1: week 5 Report 2: Week 8	During classes	10% Report 1 10% Report 2
Participation during classes	All the course	Class	20%
			Total: 100%

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

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

Students must get a minimum of 5 points 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**
Chapter 1: Fundations of classical development methods and their limitations	1.1 Development Foundations	I1
	1.2 Project Management Foundations	I1
	1.3 Limitations regarding project management and development	I1
	1.4 Limitations regarding product development	I1
Chapter 2: Description of non classic development strategies (agile methods	2.1 Introduction to Agile Methods	I1
	2.2.XP	I1
	2.3. Scrum	
	2.4 AUP	I1
	2.5. Kanban	I1
	2.6. Feature Driven Development	I1
	2.7. Comparison of Agile Techniques	
Chapter 3: Solutions for Project Management and development limitations in agile methods	3.1. Problems and Solutions for agile project management	I2
	3.2. Problems and Solutions for product development	I3
Chapter 4: Development of an Agile Project	4.1. Development and presentation of an agile project	I1, I2, I3, I4, I5, I6, I7, I8

7. Brief description of organizational modalities and teaching methods

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

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

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

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	
THEORY CLASSES	The teacher will present the basic concepts about the different topics along with small exercises
PROBLEM-SOLVING CLASSES	The teacher will present several problems that will be solved in collaboration with students.
PRACTICAL WORK	…
INDIVIDUAL WORK	…
GROUP WORK	Students will work in groups of 3-4 students solving a particular problem. They will also prepare a report with the results of the work
PERSONAL TUTORING	The teacher will be availabel for solving any question students may have either individually or in group

8. Teaching resources

TEACHING RESOURCES	
RECOMMENDED READING	Kent Beck. Extreme Programming Explained: Embrace Change. Reading, Addison Wesley, 1999. Henrik Kniberg. Scrum and XP from the Trenches. InfoQ, 2009 Scrum Primer. Scrum Training Institute. http://scrumtraininginstitute.com/library Scot Ambler. The Agile Unified process. V.1.1. 2006 Jim Highsmith. Agile Project Management: Creating Innovative Products. Addison-Wesley, 2009 Jim Higsmith. Agile Software Development Ecosystems. Addison-Wesley, 2005 Cockburn, Alistair, Agile Software Development, Addison Wesley, 2002. Jennifer Stapleton. Dynamic Systems Development Method – The method in practice. Addison Wesley, 1997. David Anderson. Kanban. Successful Evolutionary Change For Your Technology Business. InfoQ 2010
WEB RESOURCES	Subject web site (http://www.grise.upm.es/docencia/non-classic-methodologies/)
	Subject Moodle site (http://)
EQUIPMENT	Laboratory 1004
	Room 6106
	Group work room

9. Subject schedule

Week	Classroom activities	Lab activities	Individual work	Group work	Assessment activities	Others
Week 1	Topic 1		Estudio individual:			
(4 hours)	2 hours		2 hours			
Week 2	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		
Week 3	Topic 2		Estudio individual:	Trabajo en grupo		

(6 hours)	2 hours		2 hours	2 hours		
Week 4	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		
Week 5	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		
Week 6	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		

Week 7	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		
Week 8	Topic 2		Estudio individual:	Trabajo en grupo		
(6 hours)	2 hours		2 hours	2 hours		
Week 9	Topic 2		Estudio individual:	Trabajo en grupo	Presentación de trabajo	
(7 hours)	2 hours		2 hours	2 hours	1 hora	
Week 10	Topic 3		Estudio individual:			

(4 hours)	2 hours		2 hours			
Week 11	Topic 4			Trabajo en grupo		
(8 hours)	2 hours			6 hours		
Week 12	Topic 4			Trabajo en grupo	Presentación de trabajo	
(9 hours)	2 hours			6 hours	1 hora	
Week 13	Topic 4			Trabajo en grupo		
(8 hours)	2 hours			6 hours		

Week 14	Topic 4			Trabajo en grupo	Presentación de trabajo	
(9 hours)	2 hours			6 hours	1 hora	
Week 15	Topic 4			Trabajo en grupo		
(8 hours)	2 hours			6 hours		
Week 16	Topic 4			Trabajo en grupo	Presentación de trabajo	
(9 hours)	2 hours			6 hours	1 hora	