

UNIVERSIDAD DE CASTILLA - LA MANCHA **GUÍA DOCENTE**

1. General information

Course: SOFTWARE ENGINEERING I

Type: CORE COURSE

Degree: 346 - DEGREE IN COMPUTER SCIENCE AND ENGINEERING

Year: 2

Main language: Spanish

Use of additional English in Group I (Bilingual)

Center: 604 - SCHOOL OF COMPUTER SCIENCE AND ENGINEERING (AB)

Duration: First semester Second language: English

Academic year: 2019-20

Code: 42314

Group(s): 10 11 12

English Friendly: N

ECTS credits: 6

Web site:	http://campusvirtual.uclm.es		Bilingual: Y						
Lecturer: JOAQUIN FERNANDEZ MARTINEZ - Group(s): 10 11									
Building/Office	Department	Phone number	Email Office hours						
ESII / 1.A.6	SISTEMAS INFORMÁTICOS	2436	joaquin.fdez@uclm.es	m.es Consultar: http://esiiab.uclm.es/tutorias.php					
Lecturer: MARIA DOLORES LOZANO PEREZ - Group(s): 10 11 12									
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ESII / 0.C.13	SISTEMAS INFORMÁTICOS	2428	maria.lozano@uclm.es	Consultar: http://esiiab.uclm.es/tutorias.php					
Lecturer: FRANCISC	O MONTERO SIMARRO - Group	(s): 10 11							
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2. Pre-Requisites

Students are expected to have passed the subject "Information Systems" in the first year and acquired knowledge of the Object Oriented Paradigm. To this end, it is advisable to have passed the subject of Fundamentals of Programming I and II, in the first year.

3. Justification in the curriculum, relation to other subjects and to the profession

This subject provides a general view of the discipline called Software Engineering and the role it plays within the context of computer science and engineering. To this end, the course includes the basic concepts and the main features and techniques to be applied during the stages of software development, that is to say, requirements, analysis, design and implementation, taking into account the Object-Oriented Paradigm.

As a result, students will acquire the basic skills and knowledge needed to work as a software engineer. With the foundations acquired in this course, students will be able to deepen in more specific software engineering-related subjects offered throughout the degree.

4. Degree competences achieved in this course

Course competences	
Code	Description
BA4	Basic knowledge about the uses and programming of computers, operating systems, data bases, and digital programmes with applications in engineering.
CO1	Ability to design, develop, select, and assess, applications and digital systems, guaranteeing their reliability, security, and quality, according to ethical principles and the current and common laws.
CO16	Knowledge and application of principles, methodologies, and life spans of software engineering.
CO2	Ability to conceive, plan, develop and manage projects, services, and digital systems in any context, leading their start and applying continuous improvements, assessing their economic and social impact.
CO3	Ability to understand the important of negotiation, work efficiency, leadership, and communication abilities in every context of software development.
CO8	Ability to analyse, design, build and maintain applications in a strong, safe, and efficient manner by selecting the most appropriate paradigms and programming languages.
INS3	Ability to manage information and data.
PER1	Team work abilities.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Knowledge about tools that support the construction of software systems and the storage and processing of data.

Knowledge of the principles of software engineering and the main methodologies for the construction of quality software.

Building design models, both high leveled and detailed, for the construction of software systems that implement them.

Identification, modelling, and specifications of software and business requirements for the construction of software systems that implement them.

6. Units / Contents

Unit 1: Introduction to Software Engineering

Unit 1.1 Background and definitions

Unit 1.2 Fundamental concepts

Unit 2: Requirements Engineering

Unit 2.1 Introduction

Unit 2.2 Requirement: Definition, types and features

Unit 2.3 Requirements Engineering Process Models

Unit 2.4 Requirements Elicitation Stage

Unit 2.5 Requirements Analysis Stage

Unit 2.6 Requirements Validation and Verification Stage

Unit 3: Requirements modelling with UML 2.0: Use Case Diagrams

Unit 3.1 Introduction

Unit 3.2 Use Cases Specification

Unit 3.3 Graphical Notation

Unit 3.4 Relationships within a Use Case Diagram

Unit 3.5 Examples and practical cases

Unit 4: Object Oriented Analysis with UML 2.0

Unit 4.1 Introduction to Software Modelling with UML 2.0

Unit 4.2 Domain Class Diagrams

Unit 4.3 Analysis Class Diagrams

Unit 4.4 Activity Diagrams

Unit 5: Object Oriented Design with UML 2.0

Unit 5.1 State Diagrams

Unit 5.2 Sequence Diagrams

Unit 5.3 Communication Diagrams

Unit 5.4 Timing Diagrams

Unit 5.5 Component Diagrams

Unit 5.6 Deployment Diagrams

Unit 6: Object Oriented Software Development: Unified Process (RUP)

Unit 6.1 Introduction

Unit 6.2 Basic Principles of RUP

Unit 6.3 RUP Stages

7. Activities, Units/Modules and Methodology								
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	R	Description
Class Attendance (theory) [ON- SITE]	Lectures	CO1 CO16 CO2 CO3	0.88	22	N	-	-	MAG: Lectures dedicated to present the theoretical concepts of the subject, in which different methods will be used, combining master lessons with puzzles, etc.
Problem solving and/or case studies [ON-SITE]	Group Work	CO3 INS3 PER1	0.4	10	Υ	N	N	PRO, RES: Working groups (WG) will be established, composed of 3 students, who will consider various problems or specific cases that the WGs will have to solve by applying the techniques and methods seen in face-to-face theory sessions.
Group tutoring sessions [ON-SITE]	Guided or supervised work	PER1	0.2	5	N	-	-	RES: Advice and resolution of doubts on the exercises proposed to the WGs
Class Attendance (practical) [ON- SITE]	Workshops and Seminars	BA4 INS3	0.08	2	N	-	_	PLAB: Introductory session to the practices of the subject as a seminar to present the software tools to be used at the laboratory.
Computer room practice [ON-SITE]	Project/Problem Based Learning (PBL)	CO1 CO16 CO2 CO3 CO8 INS3 PER1	0.4	10	Υ	Υ	N	LAB: Practical sessions in the laboratory where students in groups of two develop a project throughout the course.
Group tutoring sessions [ON-SITE]	Guided or supervised work	CO1 CO16 CO2 CO3 INS3 PER1	0.16	4	N	-	-	TUT: Tutoring sessions to the practice groups to resolve doubts.
Project or Topic Presentations [ON- SITE]	Assessment tests	CO8 INS3	0.16	4	Υ	Υ	Υ	EVA: A total of 4 hours will be devoted throughout the course for the students to present the work performed during the practice sessions to make a progressive evaluation of the practice part of the subject
Study and Exam Preparation [OFF-SITE]	Self-study	CO1 CO16 CO2 CO3 INS3	1.6	40	N	-		EST: Hours dedicated to study the theory of the subject
Study and Exam Preparation [OFF-								Preparation of the exercises and

SITE]	Problem solving and exercises	INS3 PER1	0.8	20	N	-	- problems proposed to be solved		
Study and Exam Preparation [OFF-SITE]		BA4 CO1 CO16 CO2 CO3 CO8 INS3 PER1		15	N	-	PLAB: Preparation of practical laboratory sessions		
Practicum and practical activities report writing or preparation [OFF-SITE]		BA4 CO8 INS3 PER1	0.6	15	Υ	Υ	PLAB: Preparation of the practice reports and generation of the Y different documents that students must deliver about their practice work.		
Final test [ON-SITE]	Assessment tests	CO1 CO16 CO2 CO3 INS3	0.12	3	Υ	Υ	Y EVA: Individual final exam		
Total:									
Total credits of in-class work: 2.4				Total class time hours: 60					
Total credits of out of class work: 3.6					Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming

R: Rescheduling training activity

	Grading	System			
valuation System Face-to-Face		Self-Study Student	Description		
Final test	55.00%	0.00%	ESC: Final compulsory individual test on the contents of the subject, which includes both theoretical concepts and problem solving. To compensate with the rest of evaluable items, students need to get a minimum of 5 points in this part.		
Assessment of problem solving and/or case studies	20.00%	0.00%	INF: Evaluation corresponding to the resolution of problems and cases by the working groups. This part is not compulsory, but it is worth 2 pts out of 10. Those students who do not perform this part, can only get a maximum of 8 pts instead of 10		
Laboratory sessions	25.00%	0.00%	LAB: The practice part of the course will be assessed by the delivery of the documents generated during the lab sessions by the group together with an individual assessment activity. Students must obtain a minimum of 5 points to make the average with the rest of marks.		
1	otal: 100.00%	0.00%			

Evaluation criteria for the final exam:

ASSESSMENT CRITERIA IN THE REGULAR EXAM SESSION:

To pass the subject, it is compulsary to pass both the written exam corresponding to the theoretical lessons and the practice sessions performed in the lab. Besides, it is required a minimum mark of 5 out of 10 in each one of them (theory and practice) to pass the subject. The final mark is obtained by applying the following formula, as long as the abovementioned criteria is fulfilled:

Final Mark = Theory Mark * 0.55 + Practice Mark * 0.25 + Working Groups * 0.20

Those students who do not reach a mark of at least 5 (out of 10) both in Theory and Practice cannot pass the subject, and will get a mark no greater than 4.00 even if the final mark obtained by applying the formula is greater than 5.

Specifications for the resit/retake exam:

ASSESSMENT CRITERIA IN THE EXTRAORDINARY EXAM SESSION:

The assessment criteria are exactly the same as in the regular exam session with the following considerations:

- The students will only need to retake the failed parts. Those parts already passed by the student will not need to be repeated and their mark will be kept during the current academic course. Marks are not kept from one academic course to the next.
- The only part that cannot be retaken is the "Working Group" activities. The mark obtained in the regular exam session will be kept for the extraordinary exam session.
- The practice part of the subject can only be retaken in the extraordinary exam session if it has been performed in the lab during the first semester. It is not possible to perform the practice part of the subject for the first time in the extraordinary exam session.

Specifications for the second resit / retake exam:

ASSESSMENT CRITERIA IN THE SPECIAL EXAM SESSION FOR COMPLETION OF STUDIES:

Same criteria as in the extraordinary exam session

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours hours

Final test [PRESENCIAL][Assessment tests]

General comments about the planning: This course schedule is APPROXIMATE. It could vary throughout the academic course due to teaching needs, bank holidays, etc. A weekly schedule will be properly detailed and updated on the online platform (Virtual Campus). Note that all the lectures, practice sessions, exams and related activities performed in the bilingual groups will be entirely taught and assessed in English. Classes will be scheduled in 3 sessions of one hour and a half per week. The assessment activities could be performed in the afternoon, in case of necessity.

Unit 1 (de 6): Introduction to Software Engineering

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Class Attendance (practical) [PRESENCIAL][Workshops and Seminars] 2 Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)] 10 Group tutoring sessions [PRESENCIAL][Guided or supervised work] 4 Class Attendance (theory) [PRESENCIAL][Lectures] 22	Problem solving and/or case studies [PRESENCIAL][Group Work]	
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)] Group tutoring sessions [PRESENCIAL][Guided or supervised work] Class Attendance (theory) [PRESENCIAL][Lectures] 22	Group tutoring sessions [PRESENCIAL][Guided or supervised work]	5
Group tutoring sessions [PRESENCIAL][Guided or supervised work] Class Attendance (theory) [PRESENCIAL][Lectures] 22	Class Attendance (practical) [PRESENCIAL][Workshops and Seminars]	2
Class Attendance (theory) [PRESENCIAL][Lectures] 22	Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	10
	Group tutoring sessions [PRESENCIAL][Guided or supervised work]	
Total horas: 150	Class Attendance (theory) [PRESENCIAL][Lectures]	
	<u> </u>	otal horas: 150

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JACOBSON, I.	El Proceso Unificado de Desarrollo de Software.	Addison-Wesley			2005	
LESZEK A. MACISZEK.	Requirements analysis and system design: developing information systems with UML.	Addison Wesley			2001	
MILES, R.	Learning UML 2.0.	O'Reilly.		0-596-00982-8	2006	·
PRESSMAN, R.	Ingeniería del software. Un enfoque práctico. 6ª Edición	McGraw-Hill			2006	
Pilone, Dan	UML 2.0 in a nutshell	O'Reilly		978-0-596-00795-9	2005	
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