UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: SOFTWARE DESIGN
Code: 42327
Type: ELECTIVE
ECTS credits: 6
Degree: 407 - DEGREE PROGRAMME IN COMPUTER SCIENCE ENGINEERING
Academic year: 2020-21
Center: 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL
Group(s): 20
Year: 3
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site: Virtual campus: https://campusvirtual.uclm.es
Bilingual: N

Lecturer: **MACARIO POLO USAOLA** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero/3.21	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	3730	macario.polo@uclm.es	Disponible en https://esi.uclm.es/categories/profesorado-y-tutorias

Lecturer: **LUIS ENRIQUE SANCHEZ CRESPO** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
Fermin Caballero/2.19	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	3088	luise.sanchez@uclm.es	Disponible en https://esi.uclm.es/categories/profesorado-y-tutorias

2. Pre-Requisites

It is convenient that the student has passed the course Software Engineering I and II, has a very good programming pass and knows database design. This knowledge is not essential to take the course. However, deficiencies in this type of knowledge will require additional effort from the student to achieve satisfactory results in the subject.

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

This course is integrated into the Software Engineering Specific Technology subject of the curriculum and serves as the foundation for the profession of Software Engineer.

4. Degree competences achieved in this course

Course competences

Code	Description
INS01	Analysis, synthesis, and assessment skills.
INS02	Organising and planning skills.
INS03	Ability to manage information and data.
INS04	Problem solving skills by the application of engineering techniques.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
IS01	Ability to develop, maintain, and assess services and software systems which could fulfil all the user's needs and which work in an efficient and reliable manner, having feasible development and maintenance, and which comply with quality regulations, applying theories, principles, methodologies, and practical customs of software engineering.
IS02	Ability to assess the user's needs and specify those software requirements so as to comply with such needs, combining goals which may originally be in conflict, throughout the search for acceptable compromise within the budget limits, time possibilities, and the availability of developed systems and organisations.
IS03	Ability to solve problems of integration according to strategy functions, standards, and available technologies.
IS06	Ability to design adequate solutions in one or several application frames by the use of software engineering which could integrate ethical, social, legal, and economic aspects.
PER01	Team work abilities.
PER02	Ability to work in multidisciplinary teams.
PER04	Interpersonal relationship skills.
PER05	Acknowledgement of human diversity, equal rights, and cultural variety.
SIS01	Critical thinking.
SIS03	Autonomous learning.
SIS04	Adaptation to new scenarios.
SIS05	Creativity.
SIS09	Care for quality.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Knowledge of the main techniques and criteria for analyzing, designing and structuring software.

Knowledge of the main software security techniques and services.

Knowledge of the main quality criteria, both of the processes and of the software products.
Knowledge and understanding of the application of the main notations, strategies and tools for the analysis and design of software.
Knowledge and understanding of the application of the techniques of modeling and database design, both for classic and advanced models, following models and techniques that ensure running safety.
An understanding of how to implement software by applying engineering techniques.
Knowledge and understanding of the application of the main techniques to evaluate, validate, verify and improve software.

Additional outcomes

6. Units / Contents

Unit 1: Presentation and study of a client-server project
Unit 2: Architectural design
Unit 3: Design Patterns
Unit 4: Secure software design
Unit 5: Automatic code generation

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	INS01 INS04 INS05 IS01 IS02 IS03 IS06 PER05 SIS01 SIS05 SIS09	0.6	15	N	-	Teaching of the subject matter by lecturer (MAG)
Individual tutoring sessions [ON-SITE]		IS01 IS02 IS03 IS06 PER01 PER04 PER05 SIS01 SIS04 SIS05 SIS09	0.18	4.5	N	-	Individual or small group tutoring in lecturer¿s office, classroom or laboratory (TUT)
Study and Exam Preparation [OFF-SITE]	Self-study	INS02 PER01 PER02 PER04 SIS03 SIS05	1.8	45	N	-	Self-study (EST)
Other off-site activity [OFF-SITE]	Practical or hands-on activities	INS01 INS02 INS03 INS04 INS05 IS01 PER05 SIS01 SIS03 SIS09	0.9	22.5	N	-	Lab practical preparation (PLAB)
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	INS01 INS04 INS05 IS01 IS02 IS03 IS06 PER01 SIS01 SIS04 SIS05 SIS09	0.6	15	Y	N	Worked example problems and cases resolution by the lecturer and the students (PRO)
Writing of reports or projects [OFF-SITE]	Practical or hands-on activities	INS02 INS03 INS04 INS05 IS01	0.9	22.5	Y	N	Preparation of essays on topics proposed by lecturer (RES)
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	INS02 INS03 INS04 IS01 IS02 IS03 IS06 PER01 PER02 PER04 SIS01 SIS03	0.72	18	Y	Y	Realization of practicals in laboratory /computing room (LAB)
Final test [ON-SITE]	Assessment tests	INS01 INS02 INS04 INS05 SIS01 SIS04 SIS05	0.3	7.5	Y	Y	Final test of the complete syllabus of the subject (EVA)
		Total:	**6**	**150**			
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 (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	50.00%	50.00%	Compulsory activity that can be retaken (rescheduling) to be carried out within the planned exam dates of the final exam call (convocatoria ordinaria).
Laboratory sessions	25.00%	25.00%	Compulsory activity that can be retaken. To be carried out before end of teaching period
Assessment of active participation	10.00%	10.00%	Non-compulsory activity that can be retaken. To be carried out during the theory/lab sessions in the case of continuous evaluation students. The non-continuous evaluation students will have an alternative evaluation system for this activity.
Theoretical papers assessment	15.00%	15.00%	Compulsory activity that can be retaken. To be carried out during the theory/lab sessions
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

In compulsory activities, a minimum mark of 40% is required in order to pass that activity and have the possibility to therefore pass the entire subject. The evaluation of the activities will be global and therefore must be quantified by means of a single mark. If the activity consists of several sections, each section may be evaluated separately provided students are informed in writing of this evaluation criterion at the beginning of the academic year. In the case of the activities that may be retaken (i.e., rescheduling), an alternative activity or test will be offered in the resit/retake exam call (convocatoria extraordinaria).

The final exam will be common for all the theory/laboratory groups of the subject and will be evaluated by the lecturers of the subject in a serial way, i.e., each part of the final exam will be evaluated by the same lecturer for all the students.

A student is considered to pass the subject if she/he obtains a minimum of 50 points out of 100, taking into account the points obtained in all the evaluable activities, and also has passed all the compulsory activities.

For students who do not pass the subject in the final exam call (convocatoria ordinaria), the marks of activities already passed will be conserved for the resit/retake exam call (convocatoria extraordinaria). In the case of the passed recoverable activities, the student will have the opportunity to receive an alternative evaluation of those activities in the resit/retake exam call and, in that case, the final grade of the activity will correspond to the latter grade obtained.

The mark of the passed activities in any call, except for the final exam, will be conserved for the subsequent academic year at the request of the student, provided that mark is equal or greater than 50% and that the activities and evaluation criteria of the subject remain unchanged prior to the beginning of that academic year.

The failure of a student to attend the final exam will automatically result in her/him receiving a "Failure to attend" (no presentado). If the student has not passed any compulsory evaluation activity, the maximum final grade will be 40%.

Non-continuous evaluation:

Students who are unable to attend training activities on a regular basis may apply at the beginning of the semester for the non-continuous assessment mode. Similarly, if a student who is undergoing continuous assessment incurs any circumstance that prevents her/him from regularly attending the classroom-based training activities, she/he may renounce the accumulated mark in continuous assessment and apply for the non-continuous assessment mode. In this case, a notification by the student must be given before the date scheduled for the tests in the ordinary call, in accordance with a deadline that will be informed at the beginning of the semester.
Students who take the non-continuous assessment mode will be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences), through the assessment systems indicated in the column "Non-continuous assessment".
In the "non-continuous assessment" mode, it is not compulsory to keep the mark obtained by the student in the activities or tests (progress test or partial test) taken in the continuous assessment mode.

Specifications for the resit/retake exam:

Evaluation tests will be conducted for all recoverable activities.

Specifications for the second resit / retake exam:

Same characteristics as the resit/retake exam call.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours **hours**

General comments about the planning: The subject is taught in 3 x 1,5 hour sessions per week.

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Gamma, E.; Helm, R.; Johnson, R.; Vlissides, J.	Design patterns: elements of reusable object-oriented software	Addison-Wesley			2002	
Anton, K., J. Manico y J. Bird	OWASP PRO Active Controls for Developers, v3.0				2018	
Eduardo Fernández-Medina y Mario Piattini	Designing secure databases				2005	
OWASP Foundation	OWASP, Application Security Verification Standard 4.0				2019	