



## 1. General information

**Course:** INNOVATION AND DIGITAL TRANSFORMATION**Type:** CORE COURSE**Degree:** 2359 - MASTERS DEGREE PROGRAMME IN COMPUTER ENGINEERING (CR-2019)**Center:** 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 311046**ECTS credits:** 6**Academic year:** 2022-23**Group(s):** 20**Duration:** First semester**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** JUAN CARLOS LOPEZ LOPEZ - Group(s): 20

Building/Office	Department	Phone number	Email	Office hours
Fermin Caballero / 3.07	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	3739	juancarlos.lopez@uclm.es	Available at <a href="https://esi.uclm.es/categories/profesorado-y-tutorias">https://esi.uclm.es/categories/profesorado-y-tutorias</a>

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## 2. Pre-Requisites

Not established

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

This subject belongs to the subject of 'Management' and aims to offer the student the necessary training to face: (i) management responsibilities in companies of a technological nature, from strategic direction to digital transformation and (ii) innovation, as a fundamental process in the company, and in particular that which is based on the use of technology.

With regard to the first part, knowledge of the concepts of strategic direction is an essential task in the professional development of COMPUTER engineers, either in their projection towards leadership roles in companies or in a trajectory linked to entrepreneurship. In addition to the classic concepts of strategic and operational direction, the subject will introduce the concept of Digital Transformation from a technological and business perspective. Good practices and reference cases will be analyzed from companies that have successfully addressed these challenges.

On the other hand, among the activities that IT leaders will often have to face is the integration of Innovation processes in the company, mainly because many of these innovations will come from ICT solutions. Therefore, it is necessary to incorporate in the curriculum of the computer engineer a wide knowledge of what innovation is and how the implementation and management of innovation processes can be carried out in the company. In this way, the different types of innovation, its scope and the methodologies and strategies for carrying it out will be studied. Emphasis will also be placed on the protection and financing of innovation, and entrepreneurship, as a natural development of innovation.

## 4. Degree competences achieved in this course

## Course competences

Code	Description
CB06	Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
CB07	Apply the achieved knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the area of study
CB08	Be able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of knowledge and judgments
CB10	Have the learning skills which allow to continue studying in a self-directed or autonomous way
CE02	Ability for strategic planning, making, supervision, coordination and economic and technical management in the fields of computer engineering which have to do with: systems, applications, services, networks, infrastructures or computer installations and facilities for software development; adequately following quality and environmental criteria in multidisciplinary contexts.
CE03	Ability for the management and supervision of research projects, development and innovation in both business corporations and technological centres, guaranteeing the security and confidentiality over participants, facilities and equipment, the final quality of products and its ultimate homologation.
INS02	Organising and planning skills.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
PER01	Team work abilities.
PER02	Ability to work in multidisciplinary teams.
PER03	Ability to work in an international context.
PER05	Acknowledgement of human diversity, equal rights and cultural variety.
SIS01	Critical thinking.
SIS03	Autonomous learning.
SIS04	Adaptation to new scenarios.

**5. Objectives or Learning Outcomes****Course learning outcomes**

Description

Have knowledge of the operation and features of software development centres and factories.

Understand the special implications of working on projects and organisations with people from different cultures, languages and countries

Recognise the main business models, as well as methods and techniques for decision-making in IT companies

Know and apply the rules and techniques for project management related to technological innovation projects

Know and apply the legislation established to legally protect the results of the research

Manage research, development and innovation projects in companies and Research and Technology Centres in the field of Computer Engineering

Have basic knowledge of the strategic management process in IT companies

Acquire the necessary information to support the digital transformation and to create IT companies

Apply the principles of project management and technology transfer

**6. Units / Contents****Unit 1: An introduction to strategy****Unit 2: Strategic Analysis****Unit 3: Business Models and Scorecards****Unit 4: Innovation. Principles and Strategies****Unit 5: Innovation Tools****Unit 6: Innovation. Financing and Protection****Unit 7: Digital Transformation****7. Activities, Units/Modules and Methodology**

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (practical) [ON-SITE]	Lectures	CE02 CE03 INS02	0.72	18	Y	Y	Professor's exhibition of the syllary
Workshops or seminars [ON-SITE]	Project/Problem Based Learning (PBL)	CE02 CE03 INS02 INS05 PER01 PER02 PER03 PER05 SIS01 SIS08 SIS10	1.2	30	Y	N	Reference case studies in the technology sector
Group tutoring sessions [ON-SITE]	Guided or supervised work	CE02 CE03 INS05 SIS01	0.18	4.5	Y	N	Internship group follow-up tutorials
Study and Exam Preparation [OFF-SITE]	Self-study	CE02 CE03 SIS01 SIS03	2.1	52.5	Y	N	Case studies and analysis
Practicum and practical activities report writing or preparation [OFF-SITE]	Self-study	INS02 INS05 PER01 PER02 PER03 PER05 SIS01 SIS03 SIS04 SIS08 SIS10	1.5	37.5	Y	N	Internships
Project or Topic Presentations [ON-SITE]	Assessment tests	SIS01	0.3	7.5	Y	N	Evaluation based on presentation of practices and open exposure subject to knowledge questions.
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

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
Assessment of problem solving and/or case studies	60.00%	60.00%	Mandatory. Recoverable. Practice 1 Strategic Analysis 20%, Practice 2 Innovation Case 20%, Practice 3 Digital Transformation 20%
Oral presentations assessment	30.00%	30.00%	Mandatory. Recoverable. Practical Exhibition 1. 15%
Assessment of active participation	10.00%	10.00%	Mandatory. Recoverable. Participation in discussions and cases presented in class.
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

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).

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 progress tests, 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 submit any compulsory activity 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:

The subject is approved reaching a total of 5 out of 10 and reaching 4 out of 10 all mandatory activities.

#### Specifications for the second resit / retake exam:

The subject is approved reaching a total of 5 out of 10 and reaching 4 out of 10 all mandatory activities.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
General comments about the planning: 4 hours of class a week, alternating theoretical exhibitions with case studies and including the participation of companies in the sector	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Clayton M. Christensen	The Innovator's Dilemma <a href="http://www.claytonchristensen.com/">http://www.claytonchristensen.com/</a>	Harper Business		978-0-06-206024-2	2013	
R. S. Kaplan y D. P. Norton	Cuadro de Mando Integral (The balanced scorecard) <a href="https://books.google.es/books?id=LuWJnzcagCMC">https://books.google.es/books?id=LuWJnzcagCMC</a>	Grupo Planeta	Madrid	8498750482	2009	
L. A. Guerras y J. E. Navas	La dirección estratégica de la empresa: Teoría y aplicaciones <a href="https://books.google.es/books?id=MQEWNAACAAJ">https://books.google.es/books?id=MQEWNAACAAJ</a>	Thompson Civita		844702850X	2007	
Kim W. Chan and Renée Mauborgne	Blue Ocean Strategy: How to Create New Market Space and Make the Competition Irrelevant <a href="https://www.blueoceanstrategy.com/what-is-blue-ocean-strategy/">https://www.blueoceanstrategy.com/what-is-blue-ocean-strategy/</a>	Harvard Business Review Press		978-1625274496	2015	
Alex Osterwalder, Yves Pigneur	Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers <a href="https://www.wiley.com/en-us/Business+Model+Generation%3A+A+Handbook+for+Visionaries%2C+Game+Changers%2C+and+Challengers-p-9780470876411">https://www.wiley.com/en-us/Business+Model+Generation%3A+A+Handbook+for+Visionaries%2C+Game+Changers%2C+and+Challengers-p-9780470876411</a>	Wiley		978-0470-87641-1	2010	
Mohanbir Sawhney, Robert C. Wolcott and Inigo Arroniz	The 12 Different Ways for Companies to Innovate <a href="http://sloanreview.mit.edu/article/the-different-ways-for-companies-to-innovate/">http://sloanreview.mit.edu/article/the-different-ways-for-companies-to-innovate/</a>				2006	
Michael E. Porter	How Competitive Forces Shape Strategy <a href="https://hbr.org/1979/03/how-competitive-forces-shape-strategy">https://hbr.org/1979/03/how-competitive-forces-shape-strategy</a>	Harvard Business Press			1979	