UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: COMPUTER ENGINEERING
Code: 56304
Type: BASIC
ECTS credits: 6
Degree: 356 - UNDERGRADUATE DEGREE PROGRAMME IN ELECTRICAL ENGINEERING (CR)
Academic year: 2021-22
Center: 602 - E.T.S. INDUSTRIAL ENGINEERING OF C. REAL
Group(s): 20 21 22
Year: 1
Duration: First semester
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **MARIA GLORIA BUENO GARCIA** - Group(s): **20 21**

Building/Office	Department	Phone number	Email	Office hours
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Lecturer: **FRANCISCO RAMOS DE LA FLOR** - Group(s): **20 21**

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Lecturer: **NOELIA VALLEZ ENANO** - Group(s): **20 21**

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2. Pre-Requisites

This subject does not have pre-requisites since it is a first year subject.

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

It is a basic core subject associated with the specific competence described in the Annexe of order CIN/351/2009, of 9-02-2009, which establishes the conditions that must be met by study plans that lead to the acquisition of titles that qualify for the exercise of the different regulated professions of the Industrial Engineer title.

Computing, and the topics addressed in the subject, are part of the current necessary knowledge required by all engineering disciplines: basic knowledge of operating systems, database management, and mainly of structured programming (algorithms and data types).

Personal computers have evolved into an indispensable tool to all engineering and technology students and professionals. More specifically, the knowledge of programming languages and the ability to develop algorithms to solve problems are of great interest in any of the branches of industrial engineering.

The subject is specially relevant for the understanding of later years subjects such as Industrial Computing or Control. It is also needed in applications of any of the Industrial Engineering degrees such as structure design using finite elements (Mechanical Engineering), load flows calculation (Electrical Engineering), and data acquisition or control systems (Industrial Electronic and Automation Engineering).

4. Degree competences achieved in this course

Course competences

Code	Description
A07	Knowledge of Information Technology and Communication (ITC).
A12	Knowledge of basic materials and technologies that assist the learning of new methods and theories and enable versatility to adapt to new situations.
B03	Basic understanding of the use and programming of computers, operating systems, data bases information programs used in engineering.
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously

5. Objectives or Learning Outcomes

Course learning outcomes

6. Units / Contents

Unit 1: Introduction to computers
Unit 2: Operating Systems
Unit 3: Databases
Unit 4: Computer Networks
Unit 5: Introduction to algorithms, programming and dataflow diagrams
Unit 6: Basic elements of a programming language
Unit 7: Advanced programming concepts

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	A07 A12 B03 CB01	0.72	18	N	-	
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	A07 A12 B03 CB02	0.8	20	N	-	
Computer room practice [ON-SITE]	Project/Problem Based Learning (PBL)	A07 A12 B03	0.6	15	N	-	
Group tutoring sessions [ON-SITE]	Group tutoring sessions	B03 CB05	0.08	2	N	-	
Study and Exam Preparation [OFF-SITE]	Combination of methods	A07 A12 B03 CB05	3.2	80	N	-	
Writing of reports or projects [OFF-SITE]	Group Work	A07 A12 B03 CB03 CB04 CB05	0.4	10	Y	N	
Progress test [ON-SITE]	Assessment tests	B03	0.04	1	Y	Y	
Problem solving and/or case studies [ON-SITE]	Assessment tests	A07 A12 B03	0.08	2	Y	N	
Final test [ON-SITE]	Assessment tests	A07 A12 B03 CB01 CB05	0.08	2	Y	Y	
		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
Assessment of problem solving and/or case studies	10.00%	10.00%	Dissertation of the report
Test	20.00%	0.00%	Mid-term exam of Part I
Assessment of activities done in the computer labs	20.00%	20.00%	Autonomous student programming of algorithms in computers lab
Final test	50.00%	70.00%	End-term exam of Part II. There will include a remedial exam of Part I
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:

The students who failed the mid-term exam must take a remedial exam of Part I.

To pass the subject it is compulsory:
* to obtain a 5.0 mark in mid-term exam (or in the remedial exam of Part I).
* to obtain a 5.0 mark in end-term exam (eem) or to obtain a minimum of 4.5 mark and compensate it with the computers lab mark (clm) if following criteria is met: (eem*0,6+clm*0,1)/0,7 > 5.

The remaining evaluation activities (group report, dissertation and computer lab activity) are not compulsory, but highly recommended, as they represent 20% of the final mark.

The final mark will be the weighted mean of the different marks according to previous table weights. This mark must be over 5.0 to pass the subject.

Non-continuous evaluation:

Evaluation criteria not defined

Specifications for the resit/retake exam:

It will consist of two different retake exams (one for each part of the subject). The student must attend to any Part failed in the previous session.

To pass the subject it is compulsory:
* to obtain a 5.0 mark in Part I exam
* to obtain a 5.0 mark in Part II exam (eem) or to obtain a minimum of 4.5 mark and compensate it with the computers lab mark (clm) if following criteria is met:

(eem*0,6+clm*0,1)/0,7 > 5.

The group report and dissertation marks will be extended to this session.

The Part II mark, if better, will replace the mark of the computer lab activity.

The final mark will be the weighted mean according to previous table weights. This mark must be over 5.0 to pass the subject.

Specifications for the second resit / retake exam:

Same conditions as for the retake exam

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	**hours**
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	2
Progress test [PRESENCIAL][Assessment tests]	1
Problem solving and/or case studies [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	2
Unit 1 (de 7): Introduction to computers	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	6
Writing of reports or projects [AUTÓNOMA][Group Work]	4
Unit 2 (de 7): Operating Systems	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	4
Writing of reports or projects [AUTÓNOMA][Group Work]	3
Unit 3 (de 7): Databases	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
Unit 4 (de 7): Computer Networks	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	4
Writing of reports or projects [AUTÓNOMA][Group Work]	3
Unit 5 (de 7): Introduction to algorithms, programming and dataflow diagrams	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	8
Unit 6 (de 7): Basic elements of a programming language	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	5
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	8
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	34
Unit 7 (de 7): Advanced programming concepts	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	4
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	7
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	22
Global activity	
Activities	**hours**
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	20
Computer room practice [PRESENCIAL][Project/Problem Based Learning (PBL)]	15
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	80
Progress test [PRESENCIAL][Assessment tests]	1
Problem solving and/or case studies [PRESENCIAL][Assessment tests]	2
Final test [PRESENCIAL][Assessment tests]	2
Class Attendance (theory) [PRESENCIAL][Lectures]	18
Writing of reports or projects [AUTÓNOMA][Group Work]	10
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Angulo Usategui, José María	Fundamentos y estructura de computadores	Thomson		84-9732-180-4	2003	
Forouzan, Behrouz A.	Introducción a la ciencia de la computación : de la manipula	Thomson		970-686-285-4	2004	
J. García de Jalón, J. I. Rodríguez, J. Vidal	Aprenda Matlab 7.0 como si estuviera en primero http://mat21.etsii.upm.es/ayudainf/aprendainf/Matlab70/matlab70primero.pdf					
Modesto Castrillon, Antonio Carlos Domínguez, Santiago Candela, Luis Doreste, David Freire, Agustín Salgado, Sunil Kemchandani, Daniel Hernández	Fundamentos de informática y programación para ingeniería :	Paraninfo		978-84-9732-846-3	2011	
Prieto Espinosa, Alberto	Introducción a la informática	McGraw-Hill, Interamericana de España		84-481-4624-7	2006	
S. J. Chapman	Essentials of MATLAB programming	Cengage Learning		978-049-529-568-6	2009	
S. J. Chapman	MATLAB programming for engineers	Thomson		978-813-150-228-0	2008	
Virgós, Fernando	Fundamentos de informática [en el marco del Espacio Europeo	McGraw-Hill		978-84-481-6747-9	2008	