UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: PROGRAMMING FUNDAMENTALS I
Type: BASIC
Degree: 407 - DEGREE PROGRAMME IN COMPUTER SCIENCE ENGINEERING
Center: 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL
Year: 1
Main language: Spanish
Use of additional languages: Use of English as the main language in the bilingual group and Spanish in the other groups.
Web site: https://campusvirtual.uclm.es

Code: 42302
ECTS credits: 6
Academic year: 2022-23
Group(s): 20 21 22 23
Duration: First semester
Second language: English
English Friendly: N
Bilingual: Y

Lecturer: ESTER DEL CASTILLO HERRERA - Group(s): 21 22 23

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero/3.15	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	3742	ester.castillo@uclm.es	Available at https://esi.uclm.es/index.php/grado-en-ingenieria-informatica/profesorado/

Lecturer: MANUEL ORTEGA CANTERO - Group(s): 21 23

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero/A1.1	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	3723	manuel.ortega@uclm.es	Available at https://esi.uclm.es/index.php/grado-en-ingenieria-informatica/profesorado/

Lecturer: JESUS SERRANO GUERRERO - Group(s): 20

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero/2.05	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN	6332	jesus.serrano@uclm.es	Available at https://esi.uclm.es/index.php/grado-en-ingenieria-informatica/profesorado/

Lecturer: JAVIER VERDUGO LARA - Group(s): 20 23

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero/1.06	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN		Javier.Verdugo@uclm.es	

2. Pre-Requisites

Since this is a subject of the first semester of the first year of the degree in Computer Engineering, and will also be new for most students, it does not seem logical that prior requirements should be established.

In spite of this, and with the main objective of guaranteeing the comprehension of the contents and the acquisition of skills of this subject, it is advisable for the student to take advantage of certain personal skills and abilities that he acquired during his primary and secondary studies. Among them we will highlight the critical reading of the texts in the bibliography, the use of electronic material for this subject available on the Moodle platform and the active search for complementary material on the network.
It is also very important that the student has personal initiative and perseverance in the daily work of the subject.

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

The subject Programming Foundations I, like the other subjects in the academic plan, is not an isolated subject but is a part of it with a close relationship to the rest of the subjects.
Within this whole, the subject has been included within the subject PROGRAMMING together with the subjects Programming Fundamentals II, Data Structure, Programming Methodology and Concurrent and Real Time Programming.
As it is the first subject of this module, the subject Programming Fundamentals I will be one of the fundamental pillars, since the basic concepts of programming that the rest of the subjects of the module will use later will be studied.

In addition, the knowledge and skills acquired with this subject will be important for the proper development of subjects from other subjects such as, for example, those related to Software Engineering.

If we go a beyond the university context and think about the future incorporation of our students into the labour market, even if a graduate in computer science is not called to be a mere programmer but to be responsible for large projects, this subject, together with the rest of the subjects, will provide the necessary skills and abilities to be able to plan the project well and subsequently evaluate the different alternatives proposed.

4. Degree competences achieved in this course

Course competences

Code	Description
BA04	Basic knowledge about the uses and programming of computers, operating systems, data bases, and digital programmes with applications in engineering.
BA05	Knowledge about the structure, organization, functioning, and inter connexions of digital programmes, with their application in engineering problems.
CO07	Knowledge, design, and efficient use of types of data and structures which arise as most appropriate in problem solving.
	Ability to analyse, design, build and maintain applications in a strong, safe, and efficient manner by selecting the most appropriate

CO08	paradigms and programming languages.
INS01	Analysis, synthesis, and assessment skills.
INS04	Problem solving skills by the application of engineering techniques.
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.
UCLM02	Ability to use Information and Communication Technologies.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Problem solving by using basic algorithm design techniques.

Application of the basic principles of structured and object-oriented design for problem solving.

6. Units / Contents

Unit 1: Introduction
    Unit 1.1 Data types
    Unit 1.2 Assigments
    Unit 1.3 Input (Scanner) and output (print and printf)

Unit 2: Control structures
    Unit 2.1 Selection
    Unit 2.2 Loops

Unit 3: Data structures
    Unit 3.1 Introduction to POO
    Unit 3.2 vectors
    Unit 3.3 arrays

Unit 4: Modularity
    Unit 4.1 Without parameters
    Unit 4.2 With parameters
    Unit 4.3 Text files

Unit 5: Recursion

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	BA04 BA05 CO07 CO08	0.72	18	N	-	Teaching of the subject matter by lecturer (MAG)
Individual tutoring sessions [ON-SITE]		BA04 BA05 CO07 CO08 UCLM02	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	BA04 BA05 CO07 CO08 SIS01 SIS03	2.1	52.5	N	-	Self-study (EST)
Other off-site activity [OFF-SITE]	Practical or hands-on activities	BA04 BA05 CO07 CO08 INS01 INS04 PER01 PER02 PER04 PER05 SIS03	0.6	15	N	-	Lab practical preparation (PLAB)
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	BA04 BA05 CO07 CO08 INS04 PER01 PER02 PER04 PER05 SIS01 SIS03 UCLM02	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]	Self-study	BA04 BA05 CO07 CO08 INS01 INS04 PER02 PER04 PER05	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	BA04 BA05 CO07 CO08 INS04 PER02 PER04 PER05	0.6	15	Y	Y	Realization of practicals in laboratory/computing room (LAB)
Final test [ON-SITE]	Assessment tests	BA04 BA05 CO07 CO08 INS01 INS04 PER01 PER02	0.3	7.5	Y	Y	According to the evaluation modality (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
Laboratory sessions	25.00%	25.00%	Compulsory activity that can be retaken. To be carried out during lab sessions
Oral presentations assessment	10.00%	10.00%	Non-compulsory activity that can be retaken. To be carried out during the theory/lab sessions
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).
Theoretical papers assessment	15.00%	15.00%	Non-compulsory activity that can be retaken. To be carried out before end of teaching period
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. 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 examcall (convocatoria extraordinaria). If an activity is not recoverable, its assessment will be preserved for the resit/retake exam call (convocatoria extraordinaria) even if it has not been passed. 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 may apply at the beginning of the semester for the non-continuous assessment mode. In the same way, the student may change to the non-continuous evaluation mode as long as she/he has not participated during the teaching period in evaluable activities that together account for at least 50% of the total mark of the subject. If a student has reached this 50% of the total obtainable mark or the teaching period is over, she/he will be considered in continuous assessment without the possibility of changing to non-continuous evaluation mode.

Students who take the non-continuous evaluation 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 evaluation".

In the "non-continuous evaluation" 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**
Class Attendance (theory) [PRESENCIAL][Lectures]	18
Individual tutoring sessions [PRESENCIAL][]	4.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	52.5
Other off-site activity [AUTÓNOMA][Practical or hands-on activities]	15
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	15
Writing of reports or projects [AUTÓNOMA][Self-study]	22.5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	15
Final test [PRESENCIAL][Assessment tests]	7.5
General comments about the planning: The course is taught in three weekly sessions of 1.5 hours. This planning is for all groups. The planning can be modified in the event of unforeseen causes.	
Unit 1 (de 5): Introduction	
Teaching period: 2 weeks	
Unit 2 (de 5): Control structures	
Teaching period: 2 weeks	
Unit 3 (de 5): Data structures	
Teaching period: 2 weeks	
Unit 4 (de 5): Modularity	
Teaching period: 5 weeks	
Unit 5 (de 5): Recursion	
Teaching period: 2 weeks	
Global activity	

Activities	hours
Final test [PRESENCIAL][Assessment tests]	7.5
Class Attendance (theory) [PRESENCIAL][Lectures]	18
Individual tutoring sessions [PRESENCIAL][]	4.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	52.5
Other off-site activity [AUTÓNOMA][Practical or hands-on activities]	15
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	15
Writing of reports or projects [AUTÓNOMA][Self-study]	22.5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	15
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Nair, Premchand S.	Java programming fundamentals: problem solving through obje	CRC Taylor & Francis		978-1-4200-6547-3	2009	
Sedgewick, Robert (1946-)	Introduction to programming in Java: an interdisciplinary a	Pearson, Addison-Wesley		0-321-49805-4	2008	
Serrano Guerrero, Jesús; Vizcaíno Barceló, Aurora; Muñoz Caro, Camelia, Niño Ramos, Alfonso	Ejercicios resueltos de programación imperativa en Java	Bubok S.L.		978-84-686-2728-1	2012	Ejercicios resueltos en Java
	http://www.bubok.es/libros/218626/Ejercicios-resueltos-de-programacion-imperativa-en-Java					
Muñoz Caro, Camelia	Introduccion a la programacion con orientacion a objetos	Prentice Hall		978-84-205-3440-4	2007	