

**1. General information****Course:** PROGRAMMING FUNDAMENTALS II**Type:** BASIC**Degree:** 405 - DEGREE IN COMPUTER SCIENCE ENGINEERING (TA)**Center:** 15 - FACULTY OF SOCIAL SCIENCES AND INFORMATION TECHNOLOGIES**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:** <https://campusvirtual.uclm.es>**Code:** 42306**ECTS credits:** 6**Academic year:** 2020-21**Group(s):** 60**Duration:** C2**Second language:** Spanish**English Friendly:** Y**Bilingual:** N**Lecturer:** YOEL ARROYO RODRÍGUEZ PERAL - Group(s): 60

| Building/Office | Department | Phone number | Email | Office hours |
|-----------------|---------------------------------------|--------------|---------------------|--------------|
| 2.20 | TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN | | Yoel.Arroyo@uclm.es | |

2. Pre-Requisites

It is desirable that the student has experience in basic programming techniques. The student should be familiar with the following concepts: variables, assignments, operators, expressions, functions (parameter pass and value return), control structures and data structures (vectors, registers), knowledge acquired in Programming Fundamentals I.

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

Programming Fundamentals II, as its name indicates, represents the basics, in this case of object-oriented programming (POO). Getting started in this methodology is basic to the training of students, both to acquire the necessary bases for future subjects, and in their professional careers. It also introduces the concepts of event driven programming, as well as its application to a set of specific problems. Students are taught to develop their own applications from the object-oriented paradigm.

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. |
| 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 an international context. |
| 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**

Development of programmes throughout the use of a programming paradigm led to objects and by events.

6. Units / Contents**Unit 1: Object-oriented programming. Classes and objects****Unit 2: Inheritance and polymorphism****Unit 3: Exceptions****Unit 4: Event-Oriented Programming****7. Activities, Units/Modules and Methodology**

| Training Activity | Methodology | Related Competences (only degrees before RD) | ECTS | Hours | As | Com | Description |
|-------------------|-------------|--|------|-------|----|-----|-------------|
|-------------------|-------------|--|------|-------|----|-----|-------------|

| | | 822/2021) | | | | |
|---|----------------------------------|--|--------------------------------------|------|---|--|
| Class Attendance (theory) [ON-SITE] | Lectures | BA04 BA05 | 0.72 | 18 | N | - Teaching of the subject matter by lecturer (MAG) |
| Problem solving and/or case studies [ON-SITE] | Problem solving and exercises | BA04 BA05 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) |
| Laboratory practice or sessions [ON-SITE] | Practical or hands-on activities | BA04 BA05 INS04 PER01 PER02 PER04 PER05 | 0.6 | 15 | Y | Y Realization of practicals in laboratory /computing room (LAB) |
| Individual tutoring sessions [ON-SITE] | | BA04 BA05 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 SIS01 SIS03 | 2.1 | 52.5 | N | - Self-study (EST) |
| Writing of reports or projects [OFF-SITE] | Self-study | BA04 BA05 INS01 INS04 PER02 PER04 PER05 | 0.9 | 22.5 | Y | N Preparation of essays on topics proposed by lecturer (RES) |
| Other off-site activity [OFF-SITE] | Practical or hands-on activities | BA04 BA05 INS01 INS04 PER01 PER02 PER04 PER05 SIS03 | 0.6 | 15 | N | - Lab practical preparation (PLAB) |
| Final test [ON-SITE] | Assessment tests | BA04 BA05 INS01 INS04 | 0.3 | 7.5 | 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 |
| Practicum and practical activities reports assessment | 15.00% | 15.00% | Non-compulsory activity that can be retaken. To be carried out before end of teaching period. |
| Laboratory sessions | 25.00% | 25.00% | Compulsory activity that can be retaken. To be carried out during lab sessions |
| Assessment of active participation | 10.00% | 10.00% | Non-compulsory activity that can be retaken. To be carried out during the theory/lab sessions by the continuous assesment students. Non-continuous evaluation students will be evaluated with an alternative system |
| 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). |
| 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). The oral presentations assessment (non-recoverable activity) will be conserved for the resit/retake exam call even if it has not been passed. In the case of the passedrecoverable 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 competencies), 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 accessible 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 |
| Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities] | 15 |
| Individual tutoring sessions [PRESENCIAL][] | 4.5 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 52.5 |
| Writing of reports or projects [AUTÓNOMA][Self-study] | 22.5 |
| Other off-site activity [AUTÓNOMA][Practical or hands-on activities] | 15 |
| Final test [PRESENCIAL][Assessment tests] | 7.5 |
| General comments about the planning: The subject is taught in 3 x 1,5 hour sessions per week. The planning could be modified in the event of unforeseen causes. | |
| Unit 1 (de 4): Object-oriented programming. Classes and objects | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 7.5 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 6 |
| Unit 2 (de 4): Inheritance and polymorphism | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 6 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 6 |
| Unit 3 (de 4): Exceptions | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 3 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 1.5 |
| Unit 4 (de 4): Event-Oriented Programming | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 1.5 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 1.5 |
| Global activity | |
| Activities | hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 18 |
| Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises] | 15 |
| Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities] | 15 |
| Individual tutoring sessions [PRESENCIAL][] | 4.5 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 52.5 |
| Writing of reports or projects [AUTÓNOMA][Self-study] | 22.5 |
| Other off-site activity [AUTÓNOMA][Practical or hands-on activities] | 15 |
| Final test [PRESENCIAL][Assessment tests] | 7.5 |
| Total horas: 150 | |

| 10. Bibliography and Sources | | | | | | |
|---|---|----------------------|------|-------------------|------|-------------|
| Author(s) | Title/Link | Publishing house | Citv | ISBN | Year | Description |
| Jesús Serrano Guerrero, Camelia Muñoz Caro, Alfonso Niño Ramos, Aurora Vizcaíno Barceló | Ejercicios Resueltos de Programación Orientada a Objetos en Java http://www.bubok.es/libros/236167/Ejercicios-Resueltos-de-Programacion-Orientada-a-Objetos-en-Java | Bubok S.L. | | 978-84-686-5819-3 | 2014 | |
| Muñoz Caro, C., Niño Ramos A., Vizcaíno Barceló, A. | Introducción a la programación con orientación a objetos | Prentice Hall | | 978-84-205-3440-4 | 2007 | |
| Nair, Premchand S. | Java programming fundamentals: problem solving through object oriented analysis and design | CRC Taylor & Francis | | 978-1-4200-6547-3 | 2009 | |
| R. Sedgewick, K. Wayne | Introduction to Programming in Java: An Interdisciplinary Approach. 2nd Edition https://learning.oreilly.com/library/view/introduction-to-programming/9780134512389/ | Addison-Wesley | | 978-0672337840 | 2017 | |
| H. Schildt | Java: A Beginner's Guide. 8th Edition. https://learning.oreilly.com/library/view/java-a-beginners/9781260440225/ | McGraw-Hill | | 978-0672337840 | 2018 | |