

Academic Year/course: 2021/22

28702 - Computer Science

Syllabus Information

Academic Year: 2021/22

Subject: 28702 - Computer Science

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 423 - Bachelor's Degree in Civil Engineering

ECTS: 6.0

Year: 1

Semester: Second semester

Subject Type: Basic Education

Module:

1. General information

1.1. Aims of the course

The subject and its expected results respond to the following approaches and objectives:

- The general objective of this course is that the student acquires the necessary knowledge and skills on the use and programming of computers and the efficient use of desktop tools and applications and university interaction and communication.
- In addition, the student is trained in the basic foundations of programming and in the installation, configuration and personalization of basic computer applications. Likewise, the aptitudes and attitudes of the student are strengthened so that he is able to work and learn autonomously, integrate knowledge, manage information, develop their critical thinking so that he can analyze and solve the problems that may arise, related to information management through computer applications.

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>), in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

- **Goal 4:** Quality education
- **Goal 5:** Achieve gender equality and empower all women and girls

and, specifically, with the goals:

- **4.4** By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- **5.b** Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

1.2. Context and importance of this course in the degree

It is offered in the first semester of the first year of the degree and is notably technological.

This course has a major goal: Students must develop a number of skills in Information and Communication Technologies (ICT) that will be very useful for their academic development, the self-learning of computer tools and training in digital competences for their future work experience where, undoubtedly, they will use a wide and varied number of computer applications.

1.3. Recommendations to take this course

Students must acquire basic knowledge in the use of a computer and its most common peripherals, office software, file and directory management and Internet surfing.
Knowledge prior to the access to university is considered sufficient.

2. Learning goals

2.1. Competences

Upon passing the subject, the student will be more competent to ...

- (G01) Organize and plan
- (G02) Solve problems
- (G03) Make decisions
- (G04) Oral and written communication of the mother tongue
- (G05) Analyze and synthesize
- (G06) Manage information
- (G07) Teamwork
- (G08) Critical reasoning
- (G09) Work in an interdisciplinary team
- (G10) Work in an international context
- (G11) Improvise and adapt to face new situations
- (G12) Develop a leadership ability
- (G13) Maintain a positive social attitude towards social and technological innovations
- (G14) Reason, discuss and present your own ideas
- (G15) Communicate through word and image
- (G16) Search, analyze and select information
- (G17) Self-learning
- (G18) Possess and understand knowledge in an area of ??study that is based on general secondary education, and is usually found at a level, which, although supported by advanced textbooks, also includes some aspects that imply knowledge from the forefront of its field of study
- (G19) Apply their knowledge to their work or vocation in a professional manner and possess the skills that are usually demonstrated through the development and defense of arguments and problem solving within their area of ??study
- (G20) Gather and interpret relevant data (usually within your area of ??study) to make judgments that include a consideration on relevant social, scientific or ethical issues
- (G21) Transmit information, ideas, problems and solutions to both a specialized and non-specialized audience.
- (G22) Develop those learning skills necessary to undertake further studies with a high degree of autonomy
- (G23) Know and understand the respect for fundamental rights, equal opportunities for women and men, universal accessibility for people with disabilities, and respect for the values ??of the culture of peace and democratic values
- (G24) Promote entrepreneurship
- (G25) Apply knowledge in information and communication technologies
- (B03) Apply basic knowledge about the use and programming of computers, operating systems, databases and engineering applied computer software.

2.2. Learning goals

The student, to succeed in this subject, must demonstrate the following outcomes:

At the end of this course, the student will have the necessary knowledge to know how to use the most common computer applications and the fundamentals of the computer applications related to Civil Engineering.

2.3. Importance of learning goals

The transversal nature of this subject, together with its strong technological load, makes it play a role in the establishment of the necessary training bases, for the subsequent academic development of the university student.

The learning acquired in this subject, helps the student to optimize their daily work and communication with the university, achieving greater performance in the use of basic computer applications. In addition, it develops the necessary skills to design and implement basic level programs and, to face the installation and use of other general computer applications. It considerably improves the student's management of information, and they are initiated in the foundations of the computer applications related to Civil Engineering.

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must show that he has achieved the expected learning outcomes through the following assessment tasks

The assessment should be understood as a continuous and individualized process throughout the entire teaching-learning period, prioritizing the abilities and skills of each student, as well as their performance.

During the course different tests of training assessment will be carried out, which will allow the teacher and the student to correct, guide and improve the learning process. These tests will be varied, in terms of type of test and the way they are done. For example: survey to know the level of knowledge that the student has on the subject; direct observation on the development of individual activities in the laboratory; explanation of errors detected in the work done during the classroom sessions; etc.

The training assessment tests have a purpose of regulating the learning process, in no case will they be used for qualifying assessment by themselves, although they will be taken into consideration as a whole, for the evaluation of the attitude and active participation of the student.

In addition, different qualifying assessment tests will be carried out, which will allow the teacher to assess the knowledge acquired by the student. The different evaluation modalities and their contents are explained below.

Continuous Assessment Mode

Assessment of students under the continuous assessment mode:

1. Computer Tools Test. Individual. It will consist of the making of a project, where the different tools seen in class will be used.
2. Initial Programming test. Individual. It will consist of the timed production of a small program carried out on the computer, with the level corresponding to the contents dealt with in class
3. Final test Programming. Individual or group. It will consist of the making of a small program carried out on the computer, with the level corresponding to the contents dealt with in class.

Active participation and the initial programming tests are not compulsory and will only add to the grading, as long as they are positive.

The grading loads in the continuous assessment mode are:

- (40%) Computer tools test (compulsory)
- (10%) Initial programming test (in the laboratory)
- (40%) Final programming test (compulsory)
- (10%) Active participation (classroom or virtual-moodle)

Prior to the first call, the teacher of the subject will let each student know if he or she has passed the subject in the continuous assessment system, based on the sum of the scores obtained in the different activities in which he has participated.

In case of not passing in this way, the student will have two additional calls to try (global assessment mode) On the other hand the student who has passed the subject through this mode, may also decide to go in for the global assessment, in the first call, to get his grade higher but never lower.

The assessment criteria applied in the activities of the continuous assessment mode are:

- Tools Test: Their approach, management and correct development will be valued, as well as the achievement of results. A project will be proposed, to be developed individually within deadlines. Its grading will be between 0 and 10 points.
- Programming tests: In each of the tests the correct performance will be assessed, in compliance with the request in the instructions. The delivery will be made within given deadlines. The assessment of each test will be between 0 and 10 points. The second programming test may be individual or group.
- Active participation: Active participation and positive attitude will be assessed through participation in forums, surveys and the performance of any other proposed activities throughout the course.

In the continuous assessment mode 80% of assistance is required in the classroom activities of the course.

Global Assessment Mode

The student must take this modality when, due to his personal situation, he cannot adapt to the required work rhythm in the continuous assessment system, he has failed or would like to upgrade his mark in the continuous assessment system (this option is only valid for the 1st call)

As in the previous assessment mode, the global assessment test is intended to verify if the learning results have been achieved, as well as to add to the acquisition of the different competences.

The assessment in the global assessment system will be governed by the same levels of requirement as in the continuous assessment system. Although grading loads differ in their valuation. The statements corresponding to the different compulsory tests taken, whose level of difficulty will be equivalent to the proposals under continuous assessment, are also different.

To sum up, a student who takes the global assessment must take all the compulsory assessment tests suggested during the course, although solving the problems of this mode, together with a final exam.

The grading loads in the global assessment system are:

- (40%) Tools Testing and Programming.
- (60%) Final test (classroom).

Success in the subject is based on the sum of the scores obtained in the different activities carried out, provided that all of them have been passed separately.

For those students who have failed the continuous assessment system, but some activities have been carried out successfully, these will be valid for the global assessment test.

The activities which have been carried out successfully in the global assessment test will be valid for the next official call, within the same academic year.

The assessment criteria applied to the coincident activities in global assessment and in continuous assessment are the same.

The assessment of non-classroom students (those who, due to their personal or professional situation, do not attend classes, although they do participate in moodle and take the different assessment tests), will be ruled by the same procedures, assessment criteria and demand levels as classroom students. In any case, it will be the student himself who makes the decision to choose between continuous and global assessment.

The dates of the global assessment exams will be those officially published on the EUPLA-Web

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as theory sessions, practice sessions, and tutorials.

A strong interaction between the teacher/student is promoted. This interaction is brought into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The current course (Computing) is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each topic, the solving of problems or resolution of questions, at the same time supported by other activities.

If classroom teaching were not possible due to health reasons, it would be carried out on-line.

4.2. Learning tasks

This course is organized as follows:

- **Theory sessions:** The theory contents of the course are explained and illustrative examples are developed as a support to the theory when necessary.
- **Practice sessions:** Problems and practical cases are carried out, complementary to the theoretical concepts studied.
- **Autonomous work and study**
 - Study and understanding of the theory taught in the lectures.
 - Understanding and assimilation of the problems and practical cases solved in the practical classes.
 - Preparation of seminars, solutions to proposed problems, etc.
 - Preparation of the written tests for continuous assessment and final exams.
- **Tutorials.** On-site or online.

4.3. Syllabus

This course will address the following topics:

Theory

- Information management
- Automatic calculation
- Programming

Practice

- Assignment on information management tools
- Assignment on spreadsheet
- Programming

4.4. Course planning and calendar

The course has 6 ECTS credits, which represents 150 hours of student work in the course during the term, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the course file in the Accreditation Report of the degree, taking into account the level of experimentation considered for this course is moderate.

Activity _____	Weekly school hours
Lectures _____	4
Practical Activities _____	6

Nevertheless, the previous table can be shown in greater detail, taking into account the following overall distribution:

- 50 hours of lectures, with 50% theoretical demonstration and 50% problem-solving.
- 6 hours of written assessment tests, one hour per test.
- 4 hours of PPT presentations.
- 90 hours of personal study, divided up over the 15 weeks of the 2nd semester.

The written assessment tests will be related to the following topics:

- Assignment on information management tools
- Assignment on spreadsheet
- Programming

Further information concerning the timetable, classroom, office hours, assessment dates (<https://eupla.unizar.es/asuntos-academicos/examenes>) and other details regarding this course will be provided on the first day of class or please refer to the Faculty of EUPLA website and Moodle.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28702&Identificador=12526>