

Academic Year/course: 2022/23

## 30175 - IT Systems for Management

### Syllabus Information

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**Academic Year:** 2022/23

**Subject:** 30175 - IT Systems for Management

**Faculty / School:** 179 - Centro Universitario de la Defensa - Zaragoza

**Degree:** 563 - Bachelor's Degree in Industrial Organisational Engineering

**ECTS:** 4.5

**Year:** 3

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:**

## 1. General information

### 1.1. Aims of the course

This course establishes a solid base for understanding the basic vocabulary used by professionals who design, develop, use and maintain Information Systems in organisations. The main objective is that students become familiar with the methodologies and technologies currently used for the construction and management of Information Systems.

Likewise, the aptitudes and attitudes of the students are strengthened so that they are able to work and learn autonomously, integrate knowledge, manage information, develop their critical spirit so that they can analyse and solve the problems that arise related to information management through computer applications.

Specialization in Defence: 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/>), 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 9: Industry, innovation and infrastructure
- Goal 16: Peace, justice and strong institutions

### 1.2. Context and importance of this course in the degree

IT Systems for Management (ITSM) is a subject given in the third year of the degree. The Fundamentals of Computer Science subject, taken by the students in the previous courses, is prerequisite for ITSM. This temporary location allows students to apply the knowledge acquired in this subject and the use of computer tools for information management, in other subjects of the degree.

In this subject, students are expected to develop several information management skills that will be very useful in the management of an organization. It is essential to use Information and communications technology (ICT) to achieve it.

This subject contributes to the training of Army Officers by providing knowledge on the construction and use of Information Systems in the organizations, developing skills that Army Officers need to carry out their mission, relying on Information Systems based on computers in decision making.

### 1.3. Recommendations to take this course

The student should know the main components of a computer and its basic functionalities, be able to search for information and have acquired ease in the analysis of problems and in the design of algorithmic solutions to such problems.

## 2. Learning goals

### 2.1. Competences

Upon passing the subject, the student will improve the following competences:

1. Ability to manage information; skills to handle and apply technical specifications and the necessary legislation to

- practise engineering (C10).
- 2. Ability to apply Information and Communication Technologies (ICTs) within the field of engineering (C5).
- 3. Knowledge and skills to set up and manage information systems in organisations (C30).

## 2.2. Learning goals

To pass this subject, the student should demonstrate that:

1. Identifies the Information Systems of an organization/company as a key element for its day-to-day functioning.
2. Identifies Information Systems as a key element for growth, improvement of competitiveness, and creation of new business formulas and/or products.
3. Knows the basic concepts that make up the information systems (data vs information, knowledge, communications, ...) and the technological environment that supports them today.
4. Knows the basic parameters and the typical phases that are associated with the development and implementation of an Information System in the organization.
5. Knows the usual problems linked to these processes (communication problems, interference in the normal development of the business, maintenance, etc.).
6. Knows about success cases of the use of Information Systems and the improvements obtained. These success stories serve as a basic example.

## 2.3. Importance of learning goals

Today there is a great demand for systems that facilitate the processing of data to obtain information from them and to make timely decisions within the organizations. Therefore, a solid base in the fundamental aspects of the different types of existing information systems is essential to be able to get on well in the professional world and to be able to develop information systems that address future challenges.

# 3. Assessment (1st and 2nd call)

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

### FIRST CALL

Continuous assessment:

The students will be able to pass the total of the subject by the continuous evaluation procedure. To do this, they must demonstrate that they have achieved the expected learning outcomes by passing the evaluation instruments indicated below which will be carried out throughout the semester:

1. Written exam PE1, which will consist of questions and/or problems related to the syllabus of the subject. Its typology and complexity will be similar to those presented throughout the lectures and practice sessions. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. The weight of this exam will be 30% of the final grade of the subject. Its weight in the final grade is 30%.
2. Written exam PE2, which will consist of questions and/or problems related to the syllabus of the subject. Its typology and complexity will be similar to those presented throughout the lectures and practice sessions. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. Its weight in the final grade is 30%.
3. Project assignments. A set of projects will be proposed, related to the syllabus of the subject, which must be carried out in groups. Teams will be formed with a number of students to be determined at the beginning of the course. The students will be required to understand the requirements of the project, assess possible alternatives for a solution, and analyze their upsides and downsides. Each team will be required to submit their project in specific deadlines established by the professors of the subject. Several checkpoints could be required throughout the course by the teachers as evaluated project deliverables. The evaluation of the submitted projects will assess the depth of analysis carried out, the suitability of the presented solutions, the appropriate application of the resolution methods, the consistency between the different project sections and the quality of the written presentation. Its weight in the final grade is 40%.

The final grade of the continuous assessment (100%) will be calculated based on the specific weights of each part of the continuous assessment, with the requirement of obtaining a minimum grade of 5 out of 10 in the average of the written assignments PE1 and PE2. In the case a student obtains a grade below 5 out of 10 in the average of the written assignments PE1 and PE2, these assignments will contribute as 0 to the final grade of the subject. If the minimum of 5 out of 10 in the

average of PE1 and PE2 is not fulfilled, the student will not be able to pass the subject. Additionally, to pass the subject, the student's final grade must be equal to or greater than 5.

Global Test:

The students who do not pass the subject by continuous assessment or who would like to improve their grades, will have the right to take the Global Test set in the academic calendar, prevailing, in any case, the best of both grades. This global test will be equivalent to the continuous assessment test described and will have 100% weight in the final grade. This test will consist of:

1. Written exam. It will consist of questions and/or problems related to the syllabus of the subject. The typology and complexity will be similar to those presented throughout the lectures and laboratory sessions. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. Its weight in the final grade is 60%
2. Practical exam done in laboratory conditions. The students will be required to solve practical exercises of a similar nature to those presented throughout the practice sessions and to use the computing tools studied during the subject. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. Its weight in the final grade is 40%. Students who have met the delivery deadlines set for the projects, and have demonstrated an adequate level of achievement and quality of results in them, obtaining an assessment of their projects of at least 5, will be exempt from taking the individual practical exam in the laboratory, automatically converting the numerical grade obtained in the evaluation of their projects into their final individual practical test grade in the laboratory.

The final grade of the global test (100%) will be calculated based on the specific weights of each part of the global test, with the requirement of obtaining a minimum grade of 5 out of 10 in the written assignment. In the case a student obtains a grade below 5 out of 10 in the written assignment, this assignment will contribute as 0 to the final grade of the subject. If the minimum of 5 out of 10 in the written assignment is not fulfilled, the student will not be able to pass the subject. Additionally, to pass the subject, the student's final grade must be equal to or greater than 5.

## **SECOND CALL**

Global Test:

The students who do not pass the subject in the first call may take the Global Test set in the academic calendar for the second call. This Global Test will consist of:

1. Written exam. It will consist of questions and/or problems related to the syllabus of the subject. The typology and complexity will be similar to those presented throughout the lectures and laboratory sessions. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. Its weight in the final grade is 60%
2. Practical exam done in laboratory conditions. The students will be required to solve practical exercises of a similar nature to those presented throughout the practice sessions and to use the computing tools studied during the subject. The assessment will weigh up the quality and clarity of the answers and the resolution strategies proposed, its suitability to the specifications and restrictions raised and the appropriate application of the resolution methods. Its weight in the final grade is 40%. Students who have met the delivery deadlines set for the projects, and have demonstrated an adequate level of achievement and quality of results in them, obtaining an assessment of their projects of at least 5, will be exempt from taking the individual practical exam in the laboratory, automatically converting the numerical grade obtained in the evaluation of their projects into their final individual practical test grade in the laboratory.

The final grade of the global test (100%) will be calculated based on the specific weights of each part of the global test, with the requirement of obtaining a minimum grade of 5 out of 10 in the written assignment. In the case a student obtains a grade below 5 out of 10 in the written assignment, this assignment will contribute as 0 to the final grade of the subject. If the minimum of 5 out of 10 in the written assignment is not fulfilled, the student will not be able to pass the subject. Additionally, to pass the subject, the student's final grade must be equal to or greater than 5.

## **4. Methodology, learning tasks, syllabus and resources**

### **4.1. Methodological overview**

The approach, methodology and assessment of this course is prepared to be equivalent in any teaching scenario. It will be adjusted to the socio-sanitary conditions of each moment, as well as to the indications given by the competent authorities.

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 lectures, practice sessions, group work, autonomous work and

assessment tasks.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

## 4.2. Learning tasks

This is a 4.5 ECTS course organized as follows:

- **Lectures** (0.6 ECTS: 15 hours). The professor will explain the theoretical contents, which are available in advance on the virtual platform Moodle.
- **Practice sessions** (1.05 ECTS: 26 horas). They can include the resolution of problems/analysis of case studies that will be carried out by applying brainstorming techniques and using specific software tools as support.
- **Group work** (1.2 hours: 30 hours). Development of a project in groups, supervised by the professors. The project will be developed in groups (2-3 students), where the students will apply the methods explained in class and use the software tools seen in the laboratory. The professors present the project during the first weeks of class together with the planning of the delivery during the semester.
- **Autonomous work** (1.5 ECTS: 37 hours). Students do tasks such as study, readings, preparation of practice sessions.
- **Assessment tasks** (0.15 ECTS: 4 hours). A final written examination.

## 4.3. Syllabus

The course will address the following topics:

- Topic 1. Introduction to information systems
- Topic 2. Software engineering
- Topic 3. Unified Modeling Language (UML)
- Topic 4. Development of an information system: requirements definition and analysis
- Topic 5. Introduction to databases
- Topic 6. Development of a database: analysis and design
- Topic 7. Use of information systems: decision support tools

## 4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the "Centro Universitario de la Defensa" website (<http://cud.unizar.es>)

## 4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30175>