

30151 - Missiles

Syllabus Information

Academic year: 2023/24

Subject: 30151 - Missiles

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

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

ECTS: 6.0

Year: 4

Semester: First semester

Subject type: Optional

Module:

1. General information

The subject aims that future Officers of the Artillery fundamental specialty acquire the competences that are essential for some aspects of their professional practice. More specifically, the specific competencies necessary to understand the design, conception, operation and performance of missile and UAV weapon systems; as well as the ability to evaluate the performance of a given missile system and critically analyse its suitability to perform a specific combat mission.

Defence Profile: These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>): 9 "Industry, innovation and infrastructure" and 16 "Peace, justice and strong institutions".

2. Learning results

- RA 1: Describe the various scientific disciplines involved in the design, conception and operation of a missile, and relate them to each other to provide an overview with special emphasis on the guidance system.
- RA 2: Use the technical information that accompanies the existing missile systems, to extract from it the possibilities of the system.

3. Syllabus

Topic I. Introduction to missile systems.

Topic II. Propulsion systems.

Topic III. Aerodynamic and structural design.

Topic IV. Flight mechanics.

Topic V. Guidance and control systems. Guiding Laws.

Topic VI. Navigation systems.

Topic VII. Control and piloting modes.

Topic VIII. Introduction to UAV systems.

Topic IX. Physical laws on thermal radiation. Radiometry.

Topic X. Infrared sensors: components and operation.

Topic XI. Laser: control devices and techniques.

Topic XII. Operation and characteristics of the main missile systems.

4. Academic activities

Face-to-face activities (60h):

Theoretical and practical classes: 39 hours.

Practical classes: 3 hours.

Expositions and evaluable oral tests: 10.5 hours.

Assessment tests. 7.5 hours.

Non-face-to-face activities (90h):

Personal study. 60 hours.

Preparation of theoretical and practical work by the student: 30 hours.

5. Assessment system

CONTINUOUS EVALUATION:

The following evaluable activities (assessment tools) will be carried out:

1. Individual written test 1: on topics 1 to 3. The value of this test will be 10% of the total grade.
2. Individual written test 2: on topics 4 to 8. The value of this test will be 30% of the total grade.
3. Individual written test 3: on topics 9 to 12. The value of this test will be 20% of the total grade.
4. Compilation and research work on missile systems and UAVs. The value of the work submitted will be 20% of the total grade.
5. Evaluable presentations and oral tests on missile systems and UAVs. The value of the expositions and oral tests will be 20% of the total grade.

The final continuous evaluation grade will be calculated according to the specific weight of each continuous evaluation activity.

In order to pass the subject, the student must obtain a final grade higher or equal to five, and not have obtained a grade lower than three in any of the continuous evaluation activities described above.

FIRST CALL:

In case of not passing the continuous evaluation, the student will have to take the global test of the first call. This global test will have a 100% weight in the final grade . It will consist of an exam on all the contents of the subject.

In order to pass the subject, the student must obtain a final grade higher or equal to five in this test.

Only for the first call, in the case that the average for continuous evaluation of the subject exceeds five, but there is only one individual written test whose grade does not reach three, the student may request that the first call test be limited to a repetition of the written test of continuous evaluation in which they had not reached a grade of three. In this case, the same percentages and evaluation criteria will be applied as for the continuous evaluation.

SECOND CALL:

In case of not passing the continuous evaluation or the first call, the student will have to take the global test of the second call. This global test will have a 100% weight in the final grade. It will consist of an exam on all the contents of the subject. In order to pass the subject, the student must obtain a final grade higher or equal to five in this test.

RELATIONSHIP BETWEEN ASSESSMENT TOOLS AND LEARNING RESULTS:

Assessment instruments:	RA-1	RA-2.
Evaluable activity 1	X	X
Evaluable activity 2	X	X
Evaluable activity 3	X	X
Evaluable activity 4		X
Evaluable activity 5		X
Global testing	X	X