

Información del Plan Docente

Academic Year	2016/17
Academic center	179 - Centro Universitario de la Defensa - Zaragoza
Degree	563 - Bachelor's Degree in Industrial Organisational Engineering
ECTS	4.5
Course	3
Period	First semester
Subject Type	Compulsory
Module	---

1.Basic info**1.1.Recommendations to take this course****1.2.Activities and key dates for the course****2.Initiation****2.1.Learning outcomes that define the subject****2.2.Introduction****3.Context and competences****3.1.Goals****3.2.Context and meaning of the subject in the degree****3.3.Competences****3.4.Importance of learning outcomes****4.Evaluation****5.Activities and resources****5.1.General methodological presentation****Methodological overview**

The learning process that has been designed for this course is based on the following:

Scheduled learning activities

The learning process designed for this course combines the following elements:

- **Theoretical and practical classes** that allow the transmission of knowledge to the students, promoting participation of them, in which, case studies will be resolved as well as theory will be taught without having an explicit separation between.

- Computer assisted **practical classes** that will be taught in the classroom with laptops available to students or in the computer labs.

-Realization of **tutored works** . Students will work in groups under the supervision of their teachers.

- **Personalized attention** both in small groups and individualized in the tutorials.

- **Study and personal work** continued by students from the beginning of the course.

At the ADD the basic theoretical content will be available, list of problems and case studies, the guides of the computer practices as well as supplementary material will be also available.

It must take into account that the subject has both theoretical and practical orientation. Therefore, the learning process emphasizes as much as in the participation of students in classes, as in the realization of problems and laboratory practices, in the realization, in group, of a case study, and in the individualized study.

5.2.Learning activities

Teachers of the subject make public to the students the programme with the specific dates of the activities through the Moodle platform that can be consulted by logging with their username and password at the address <http://moodle.unizar.es> . These activities are the sum of the learning activities and evaluation activities described above:

The credits of the subject are divided into:

Classroom activities (45 hours):

- Master classes (30 hours)
- Practical classes (10 hours)
- Evaluation and intermediate tests (5 hours)

Student personal work and tutored learning activities (67.5 hours)

5.3.Program

Topic 1. Introduction to telecommunication systems.

Topic 2. Voice signals.

Topic 3. Wired transmission systems.

Topic 4. Optical fibre.

Topic 5. Signal modulation and multiplexation.

Topic 6. Electromagnetic waves propagation.

Topic 7. Telecommunication networks.

Topic 8. Military telecommunication systems.

Topic 9. Introduction to CBRN.

Topic 10. Nuclear agents in CBRN environments.

Topic 11. Biological and Chemical agent in CBRN environments.

5.4.Planning and scheduling

During the course, lectures schedule will be available in the Centro Universitario de la Defensa web site: <http://cud.unizar.es> . Deadlines for the reports presentation will be shown during the on-going course (during the lectures) or on Moodle platform. Audio-visual and paper-based materials for this course will be available early enough in the Moodle platform.

5.5.Bibliography and recomended resources

Fundamental bibliography:

- Texto básico de publicaciones AGM.
- AGM - CG - 043.
- NBQ nivel intermedio. AGM
- OR5-017. Orientaciones. Defensa NBQ.
- OR7-019. Orientaciones. Protección NBQ de las Pequeñas Unidades

Complementary bibliography:

- OR3-501: Sistemas de Telecomunicaciones e Información (CIS).
- OR5-503: Orientaciones de empleo de la RBA.
- RE6-501: Radioteléfono de PR-4G.
- DO2-007: Guerra Electrónica.
- OR5-501: Procedimientos operativos de Telecomunicaciones
- D-0-0-1. Doctrina. Empleo de la fuerza terrestre.
- OR7-021. Orientaciones Protección individual NBQ.
- OR7-025 Orientaciones. Órganos de Mando y Control NBQ

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- MI6-046 Manual de Instrucción. Unidades de Reconocimiento NBQ.
- Manuales y apuntes informativos de Defensa Química, Nuclear y Biológica de la Escuela Militar de Defensa NBQ.
- STANAG,s 2083, 2103, 2104, 2112, 2352, 2957 y 2984 relativos a la amenaza NBQ.