Universidad Zaragoza

**Academic Year/course: 2021/22**

# 63228 -

## Syllabus Information

**Academic Year:** 2021/22
**Subject:** 63228 -
**Faculty / School:** 107 - Facultad de Educación
**Degree:** 584 -
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**ECTS:** 6.0
**Year:** 1
**Semester:** Second semester
**Subject Type:** Optional
**Module:**

## 1. General information

## 2. Learning goals

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

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

### 4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives using two types of training actions. In the first, the student will know, briefly, what the current legislation on the teaching of Technology in ESO and Baccalaureate establishes. STSE (Science-Technology-Society-Environment) approach as an innovative tool to teach the subject of Technology will be presented. Basic theoretical content linked to the different thematic blocks will be highlighted and explained, and the contents and tools for teaching the subjects will be presented and discussed with the students. Texts books currently used to teach Technology will be critically analyzed. In the second block of this first activity, resources to update or expand knowledge in the field of technology will be presented to the student. In some specific topics of technology, professors/professionals who are experts in this field will be invited to give a seminar providing a more updated vision. This action will be carried out through lectures carried out in a synchronous way in which the proposed program will be developed. In these classes, presentations made with the computer will be used and connections to web pages to show teaching resources, both in Spanish and in other languages, and web pages of research and development organizations and centers will be also shown.

Lab sessions constitute the second training activity. The non-attendance (except for health or regulatory reasons at the academic level) means that the student must choose the global assessment as explained in the evaluation section. In the lab sessions students will work with experiences, experiments and practices related to technology and will carry out some of them. For the specific case of the field of electronics and electricity, some simple example circuits used in current systems will be built.

## 4.2. Learning tasks

The course includes the following learning tasks:

- A01 Lectures and seminars:  Oral presentations of the main contents will be carried out by synchronous classes in the classroom physically or, depending of the health emergency through online classes (using a video-communication application).
- A03 Laboratory and practice sessions: Lab sessions corresponding to the field of materials, energy, robotics, electronics and small experiences related to Technology will be performed. These practices will be carried out in the teaching laboratories of the Materials Science and Metallurgical Engineering Area and of the Department of Electronic and Communications Engineering. The regulations in force at the health and academic level will be complied with.
- A05 Assignments: The student must prepare an educational unit and propose some experiments or workshop practices. Tutoring will be carried out by email and synchronously through video-communication applications (such as Google-Meet sessions).
- A06 Tutorial: Personalized attention to the student in order to review and discuss the materials and topics presented in both theoretical and practical classes. It will be carried out mainly by email and through telematic applications (such as Google-Meet sessions). Student will know the office hours at the beginning of the course.
- A08 Assessment: Oral presentation of the educational unit and of the proposed practices. This presentation will be followed by a discussion and debate about the contents mainly in order to clarify the most relevant concepts and to improve the assignments. This activity can be done entirely synchronously (presentation, discussion and debate) or the presentation can be done asynchronously (recording a video) and maintaining the discussion and debate synchronously.

## 4.3. Syllabus

Technology: Discipline and matter

Concept of Technology and its importance as a subject in secondary education and Baccalaureate.
CTSA Vision: Motivating tool and a way of working in the classroom.
Thematic blocks (materials, structures, mechanisms, electricity, electronics, energy, robotics ...).
Textbooks to teach Technology: Critical text analysis.
Concept maps and examples.
Sources of multimedia resources in Spanish: Ex .: Tecno 12-18.
Multimedia resource sources in other languages: English, French.
Experiments and practices for the Workshop classes.
Updating of knowledge and research in Technology Official Centers (Ministry of Education): CIDE, INTEF.
Websites of companies, educational centers, associations and societies.
Didactic magazines and bibliography for teacher training.
Selection of materials for simple applications: Problem statement and use of the CES database.
Research Centers and their scientific dissemination.
Search for scientific information: (FECYT) ISI Web of Knowledge, Scirus ...

PRACTICAL CONTENT

I - Material properties
II - Material tests
III - Experiences: "What is the life time of a galvanized sheet?", "Clean energy sources: fuel cells" and Laser, fiber optics and communications, "3D printing", ....
IV- Software and multimedia media.
V - Instrumentation and electronics laboratory.
VI - Electrical circuits
VII - Analog electronic circuits
VIII - Digital electronic circuits

## 4.4. Course planning and calendar

The enrollment, start and end dates corresponding to this subject will correspond to those decided by the Faculty of Education according to the academic calendar of the University of Zaragoza for the current course.

Global evaluation, both for the first call and for the second call assessment date, will be carried out during the period assigned by the Faculty of Education to take the exams for both calls, in accordance with the academic calendar of the University of Zaragoza for the current academic year. Dates and times for the examination will be established in agreement with the students.

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 Faculty of Education website.

## 4.5. Bibliography and recommended resources

The course?s bibliography is kept updated and is consulted at the Library website (search for recommended bibliography on biblioteca.unizar.es)

Subject: Contenidos disciplinares de Tecnología: 63228