68538 - Discipline content for Technology in the speciality subject of Technology at Secondary and VIth form level

Información del Plan Docente

Academic Year	2016/17
Academic center	107 - Facultad de Educación
Degree	415 - Master's in Teacher Training for Obligatory Secondary Education, Sixth Form, Professional Training and Language, Arts and Sports Teaching 358 - University Master's in Secondary School Teaching: Technology and IT
ECTS	4.0
Course	---
Period	Indeterminate
Subject Type	Optional, 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

The student, in order to pass the course, will have to demonstrate the following results...

1: The student is able to select, prepare and develop contents for teaching units corresponding to subjects related with the matter of Technology (secondary and high school and A level Studies), built following a STSE Framework (Science-Technology- Society- Environment).

2: The student is aware about the Technology as a key discipline in our society which evolves very rapidly and that therefore the updating of knowledge is necessary to carry out a good teaching work.

3: The student is able to progress and to increase his/her knowledge on Technology using available Internet information resources and data from scientific and technological institutions.

4: The student is able to analyze critically textbooks on Technology and possesses criteria for the choice of most appropriated textbook for his teaching work in line with his own approaches.

2.2.Introduction

A brief review of the education policy from the point of view of Technology education will be performed. An analysis and description of the different topics of the discipline will be done and some teaching available resources and multimedia will

be shown. The idea of constant knowledge updating of the Technology Teacher will be promoted since it is necessary for a good teaching work due to the fast evolution of Technology.

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

5.2.Learning activities

5.3.Program

The course syllabus offered to the student to help him to achieve the expected results includes the following activities:

Classroom lessons

National and regional laws on secondary and high school compulsory education on Technology

Ley Orgánica de Mejora de la Calidad Educativa (LOMCE), BOE 9-12-2013

Real Decreto 1105/2014, Currículo básico de ESO y Bachillerato (26-12-2014)

BOA, Orden, Currículo ESO y Bachillerato y su aprobación (15-05-2015)

BOA, Orden 9-05-2015 (suspensión)

BOA, Instrucción, ordenación educativa del primer y tercer curso de Educación Secundaria Obligatoria y del primer curso de Bachillerato para el curso escolar 2015-2016. (26-08-2015)

BOA, Instrucciones complementarias ESO y Bachillerato, (4-09-2015)

BOA, Orden 26-05-2016, Currículo de ESO.

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Technology: Subject and contents

- Concept of Technology and its importance in secondary and high school education.

- Science, Technology, Society and Environment (STSE) view: A motivating tool and a working resource in the classroom.

- Matters class: Materials, Structures, Mechanisms, Hydraulics, Pneumatics, Electricity, Electronic, Energy.

- Current textbooks for teaching Technology: Critical analysis of their contents.

- Conceptual maps and examples.

- Sources of Spanish multimedia resources; i.e. Tecno 12-18.

- Multimedia resources on Technology in other languages; English, French, etc.

- Laboratory experiments and practice workshops.

- Updating knowledge and research advances in Technology.

- Government and other public centers: Ministry of Education, CIDE, ITE, etc.

- Companies, schools, web pages of professional and technical associations.

- Education and research journals and magazines, books, etc. for teacher training.

- Materials selection for basic component design: problem solving and use of CES database and program.

- National and worldwide research centers for the scientific and technological dissemination.

- Search resources for scientific and technological information: (FECYT), ISI Web of Knowledge, madri+d, Scirus, etc.

Laboratory practices

1) Materials properties: Thermal expansion in metals. PMMA refraction index measurement. Dielectric constant determination of some materials. Non destructive testing: ultrasonic test, liquid penetrant test, magnetic particles test.

2) Steels. Phase diagrams and heat treatments. Cold rolling and recrystallization annealing. Hardness and impact toughness. Optical microscopy and metallography.

3) Laboratory experiments: Life of a galvanized Steel sheet, Clean energy sources: the fuel cell, Miniaturization: advancements and risks.

4) How to test an electronic circuit: Is it working properly?

5) To load a phone battery from mains: How?

6) Analog power regulation: control and efficiency considerations.

7) Digital power regulation: overcoming analog age.

5.4.Planning and scheduling

5.5.Bibliography and recomended resources