

Course guide

320104 - ISA - Implementation of Audiovisual Systems

Last modified: 19/04/2023

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: NESTOR BERBEL ARTAL

Others:

REQUIREMENTS

Students should have taken and passed the following subjects:

- Digital Electronics.
- Signals and Systems.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CE21-ESAUD. Ability to build, operate, and manage telecommunications services and applications, understood as systems for capturing, analog and digital processing, encoding, transportation, representation, processing, storage, reproduction, management, and presentation of audiovisual services and multimedia information. (Specific Technology Module: Sound and Image)

Transversal:

CT04 N2. Teamwork - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favour communication, task assignment and cohesion.

TEACHING METHODOLOGY

Guided learning hours consist, on the one hand, of theory classes (large groups) in which a lecturer briefly presents the general learning objectives corresponding to the basic subject concepts.

Students are encouraged to actively participate in their own learning through practical exercises. Support material in the form of a detailed syllabus will be used via ATENEA: learning objectives according to content, concepts, examples, programmed evaluation and guided learning activities and reading lists. The last type of guided learning hours consists of laboratory practicals in pairs, aimed at developing basic teamwork skills and at introducing students to the application of the scientific method to the resolution of laboratory problems.

As a basis for the guided activities, before and after each session tasks will be proposed for individual or group study outside the classroom. Other autonomous study time is encouraged, such as time spent on guided reading and problem resolution.

LEARNING OBJECTIVES OF THE SUBJECT

Learn to understand the structure of a multimedia system, describe systems and develop new systems. Understand the problems associated with implementing multimedia systems. Understand and apply the steps for developing a multimedia system. Understand the different solutions for implementing algorithms based on digital signal processing.



STUDY LOAD

Type	Hours	Percentage
Hours large group	15,0	10.00
Self study	90,0	60.00
Hours small group	45,0	30.00

Total learning time: 150 h

CONTENTS

TOPIC 1: MULTIMEDIA SYSTEMS

Full-or-part-time: 9h

Theory classes: 2h

Laboratory classes: 3h

Self study : 4h

TOPIC 2: DSP ALGORITHM REPRESENTATION

Full-or-part-time: 8h

Theory classes: 1h

Laboratory classes: 3h

Self study : 4h

TOPIC 3: DISCRETE FILTER DESIGN

Full-or-part-time: 48h

Theory classes: 4h

Laboratory classes: 12h

Self study : 32h

TOPIC 4: FILTER IMPLEMENTATION

Full-or-part-time: 54h

Theory classes: 4h

Laboratory classes: 18h

Self study : 32h

TOPIC 5: TECHNIQUES FOR OPTIMISING MULTIMEDIA SYSTEMS

Full-or-part-time: 31h

Theory classes: 4h

Laboratory classes: 9h

Self study : 18h



GRADING SYSTEM

Final Mark= $0.25 \cdot (\text{Partial exam}) + 0.25 \cdot (\text{Final Exam}) + 0.5 \cdot (\text{Laboratory Mark})$

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.

If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

BIBLIOGRAPHY

Basic:

- Meyer-Baese, U. Digital signal processing with field programmable gate arrays. 3rd ed. Berlin: Springer, 2007. ISBN 9783540726128.
- Nishitani, T.; Keshab K., P. Digital signal processing for multimedia systems. New York: Marcel Dekker, 1999. ISBN 0824719247.
- Parhi, K.K. VLSI digital signal processing systems: design and implementation. New York: John Wiley & sons, 1999. ISBN 9780471241867.