



Course guides

230327 - PSM - Music Signal Processing

Last modified: 28/05/2020

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2020 **ECTS Credits:** 2.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: Philippe Salembier

Others: Philippe Salembier

PRIOR SKILLS

Basic knowledge in signal, systems and signal processing

REQUIREMENTS

Signal and systems, Introduction to audiovisual signal processing ? Prerequisite

TEACHING METHODOLOGY

- ? Lectures
- ? Lab sessions
- ? Individual work (distance)

LEARNING OBJECTIVES OF THE SUBJECT

This course provides an introduction to the modeling of musical signals, digital audio effects and sound synthesis. During the course, students will learn the basic notions allowing them to create or study an original synthesizer or digital audio effect.

STUDY LOAD

Type	Hours	Percentage
Self study	30,0	60.00
Hours small group	20,0	40.00

Total learning time: 50 h



CONTENTS

eMusical signal modeling

Description:

- o Temporal notions (ADSR envelope)
- o Spectral modeling: Sinusoidal, harmonic and stochastic models.

Full-or-part-time: 4h

Laboratory classes: 4h

Digital audio effect

Description:

- o Delay
- o Amplitude and Ring modulation
- o Time stretching
- o Pitch correction

Full-or-part-time: 5h

Laboratory classes: 5h

Sound synthesis

Description:

- o Subtractive synthesis
- o FM synthesis
- o Physical modeling
- o Percussion synthesis and sequencers

Full-or-part-time: 6h

Laboratory classes: 6h

Project

Description:

Creation or study of an original synthesizer or digital audio effect

Full-or-part-time: 5h

Theory classes: 5h

GRADING SYSTEM

Creation and evaluation of an original instrument or digital audio effect. Work in group of two students.

BIBLIOGRAPHY

Basic:

- Miranda, Eduardo. Computer sound design: synthesis techniques and programming. 2nd. ed. Focal Press, 2002. ISBN 9780240516936.
- Zolzer, Udo. DAFX: Digital Audio Effects [on line]. 2nd. ed. John Wiley & Sons, 2011 [Consultation: 17/07/2017]. Available on: <http://onlinelibrary.wiley.com/book/10.1002/9781119991298>. ISBN 9781119991304.