Course guides
230327 - PSM - Music Signal Processing

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Self study</td>
<td>30,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>20,0</td>
<td>40.00</td>
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</tbody>
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Total learning time: 50 h
## CONTENTS

### eMusical signal modeling

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

**Full-or-part-time:** 4h  
Laboratory classes: 4h

### Digital audio effect

**Description:**
- Delay  
- Amplitude and Ring modulation  
- Time stretching  
- Pitch correction

**Full-or-part-time:** 5h  
Laboratory classes: 5h

### Sound synthesis

**Description:**
- Subtractive synthesis  
- FM synthesis  
- Physical modeling  
- 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:**