

## 230327 - PSM - Music Signal Processing

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering  
 Teaching unit: 739 - TSC - Department of Signal Theory and Communications  
 Academic year: 2019  
 Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
 BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)  
 ECTS credits: 2 Teaching languages: Spanish

### Teaching staff

Coordinator: 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 an original synthesizer or digital audio effect.

### Study load

Total learning time: 50h	Hours small group:	20h	40.00%
	Self study:	30h	60.00%

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### Content

<p>title eMusical signal modeling</p>	<p>Learning time: 4h Laboratory classes: 4h</p>
<p>Description:</p> <ul style="list-style-type: none"> <li>o Temporal notions (ADSR envelope)</li> <li>o Spectral modeling: Sinusoidal, harmonic and stochastic models.</li> </ul>	
<p>Digital audio effect</p>	<p>Learning time: 5h Laboratory classes: 5h</p>
<p>Description:</p> <ul style="list-style-type: none"> <li>o Delay</li> <li>o Amplitude and Ring modulation</li> <li>o Time stretching</li> <li>o Pitch correction</li> </ul>	
<p>Sound synthesis</p>	<p>Learning time: 6h Laboratory classes: 6h</p>
<p>Description:</p> <ul style="list-style-type: none"> <li>o Subtractive synthesis</li> <li>o FM synthesis</li> <li>o Physical modeling</li> <li>o Percussion synthesis and sequencers</li> </ul>	
<p>Project</p>	<p>Learning time: 5h Theory classes: 5h</p>
<p>Description: Creation of an original synthesizer or digital audio effect</p>	

### Qualification system

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

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### Bibliography

#### Basic:

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.

Miranda, Eduardo. Computer sound design: synthesis techniques and programming. 2nd. ed. Focal Press, 2002. ISBN 9780240516936.